GARDNER ON BRUNO BETTELHEIM • THE FLATWOODS UFO MONSTER • *60 MINUTES*

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The Face Behind the Face on Mars

Why Bad Beliefs Don't Die

Worlds in Collision: Applying Reality to the Paranormal

Supernatural Power and Cultural Evolution

Francis Bacon and the True Ends of Skepticism

The New Paranatural Paradigm

Published by the Committee for the Scientific Investigation of Claims of the Paranormal

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EDITOR'S NOTE

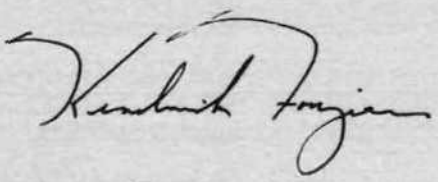
Mars and the Popular Imagination

Pseudoscientific and fringe-science ideas often depend on an enthusiastic and charismatic backer to give them a prolonged life in the public eye. Immanuel Velikovsky comes to mind as an example with his planetary-pinballs, worlds-in-collision theories so popular in the 1950s, 60s, and 70s. Erich von Däniken was another with his ancient-astronauts explanations for archaeological wonders on earth.

In this issue Gary P. Posner provides a critical look at the man behind another idea that combines highly speculative planetary "science" and proposed ancient monuments. In "The Face Behind the 'Face' on Mars," Posner examines the pronouncements of Richard C. Hoagland, the person most identified with keeping alive the idea that on Mars there is an actual carved "face" as well as other ancient constructed monuments. Hoagland is a gifted speaker and aggressive promoter. His book *The Monuments of Mars: A City on the Edge of Forever* never achieved the prominence of Velikovsky's and von Däniken's best-selling books, but he has continued to have a strong presence on the conspiracy-theory talk-show circuit and similar forums. Posner, a physician, founder of the Tampa Bay Skeptics, and CSICOP consultant, has been a Hoagland-watcher for a decade. His well-researched article lets the facts speak for themselves, and I'll let Posner's article speak for itself here.

I just want to make two side points: First, there never was a government cover-up. Just the opposite. When the Viking 1 Orbiter spacecraft in late July 1976 took the now-famous photo (Plate #035A72) of a geological feature on Mars that had a striking resemblance to a face, NASA promptly released the photo and pointed that fact out. Everyone knew the feature was probably a perceptual illusion of light and shadow, but it was kind of fun and the media treated it light-heartedly too. I remember publishing it in *Science News* that summer when I was editor. (Our 26 consecutive weeks of coverage of the Viking mission by *Science News* space editor Jonathan Eberhart later won the American Association for the Advancement of Science/Westinghouse/American Institute of Physics science writing award for magazines.) Amidst all the real science going on, no one really took the "face" seriously, but it was probably inevitable that a subculture would arise to promote it as an ancient monument.

Second, the photo probably did, in a small way, help keep alive public interest in Mars in the several decades following the Viking mission, until NASA could send another series of spacecraft to the Red Planet starting in the 1990s. There was, people could assume, always the slimmest possibility that the face just might be real. Even ideas that turn out to be wrong, like astronomer Percival Lowell's illusory Martian "canals," can have the positive effect of promoting legitimate scientific or popular interest (both, in Lowell's case) in the topic. In any event, in 1998, the Mars Global Surveyor orbital spacecraft finally took images of the same face-and-pyramid features on Mars with ten times better resolution than Viking and showed they were entirely natural. (Hoagland of course disagrees.) But other photos taken by the spacecraft of the edges of gullies and valleys on Mars have recently shown something far more scientifically significant—strong evidence of sources of liquid water at shallow depths beneath the Martian surface in relatively recent times. This discovery passed peer review and was published in the scientific literature (see Malin and Edgett, *Science*, 288:2330–2335, June 30, 2000). So the fascination about the possibility of some form of life having existed on Mars will continue. And once, again real science has far outstripped pseudoscience.



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60 Minutes Gets Substandard C Grade for Medical Reporting in ACSH Study

The much-honored CBS program *60 Minutes*, the highest rated public affairs program in television history, gets a substandard C grade in its reporting over the years on medical treatments and health threats, according to a detailed new study by the American Council on Science and Health.

60 Minutes has a reputation for credibility and its correspondents have received more than eighty major broadcasting awards, though specific *60 Minutes* programs on health claims have been the subject of published criticism before (including those on shark cartilage as cancer treatment, toxicity of mercury amalgam fillings, various arthritis treatments, and Alar as a cause of cancer). Despite this, the authors of the study say they are aware of no previous systematic evaluations addressing the accuracy of the program's reporting on health topics.

William M. London, Elizabeth M. Whelan, and Ruth Kava of the ACSH identified 135 segments on health and environmental topics aired from January 1978 through November 1995. They purchased all 128 transcripts that were available (seven were on legal hold). After eliminating those that dealt with issues of health care delivery and human interest profiles, they arranged for evaluations of 97 transcripts that addressed alleged health threats, health advice to consumers, and medical information.

Each transcript was reviewed by one or more panels, each consisting of three experts recruited as unpaid referees. There were a total of 66 referees, including 33 with M.D. degrees, 24 with PhDs, and the others with various other medical-related degrees such as DDS or PharmD. Each expert completed for each assigned transcript an evaluation form addressing issues of scientific accuracy. The form included eight items with five response options ranging from "strongly agree" to "strongly disagree" and one question asking for an overall "report card grade" ranging from "F" (failure) to "A" (excellent) that was recoded as integers from 0 to 4, and four questions eliciting comments.

The eight items used by the referees were four positive and four negative statements such as "the segment emphasized a scientific perspective," "airing the segment addressed a genuine priority for promoting public health," "all scientists or heath care experts interviewed as experts appeared to have relevant qualifications," "the segment sent an extreme rather than mainstream message," "the segment relied too much on anecdotal rather than scientific evidence," "the segment was deceptive," and so on.

The authors note that the study had limitations and advantages for quality assessments similar to those of the process of peer reviewing manuscripts submitted to medical journals. It's an imperfect process, they acknowledge. Nevertheless, they say, "Despite the limitations of peer review we believe our data probably provide a reliable indication of which stories on *60 Minutes* were obviously flawed or invalid."

The top-ranked segment was the 1994 program "Less Than a Miracle," an investigation and exposé of Facilitated Communication in the treatment of autistic children. It received a perfect 4.0 ranking from the referees. A 1990 segment on acid rain was next, at 3.8.

The adjusted mean of the grade point averages was 2.0 — equivalent to a C grade. Less than 25 percent of the transcripts received mean grades greater than 3.0 (good) while more than 40 percent of the transcripts received mean grades less than 2.0 (fair).

"The scientific reviewers who performed the study cited clear misstatements or falsehoods in 46 out of the 97 segments reviewed," says London, the lead author. Notes co-author Elizabeth Whelan: "The *60 Minutes* segments reviewed in the ACSH study ranged in quality from egregiously misleading to excellent, accurate reports."

Errors of inattention to evidence and of imprudence were common, say the authors. The most frequently cited problem was that the transcripts relied too much on anecdotal evidence. Reporting accuracy was judged only fair, on average.

The charts presented here, con-

Highest-Ranked Segments (better than 3.0 mean grade)

Rank	Segment Name (Topic)	Year	Mean Grade
1	"Less Than a Miracle" (Facilitated Communication and Autistic Children)	1994	4.0
2	"Acid Rain"	1990	3.8
3.5	"40,000 a Day" (Third World famine)	1989	3.7
3.5	"Tempest in a Test Tube" (embryo research and in vitro fertilization)	1986	3.7
5.5	"Women at Risk?"(silicone breast implants)	1995	3.5
5.5	"To Your Health" (health benefits of moderate alcohol consumption)	1995	3.5
9	"RU 486"	1991	3.3
9	"Tobacco on Trial"	1988	3.3
9	"What About Prozac?"	1991	3.3
9	"Check the Water" (gasoline in drinking water)	1983	3.3
9	"Life and Death in San Francisco" (AIDS)	1986	3.3
12	"Why?" (cholera vaccine)	1994	3.2

densed from more detailed charts in the published study, list the 12 segments that received a better than 3.0 grade in the study (ranked 1 through 12) and the *17 segments that received a grade of less* than 1.0 (ranked 81 through 97 in the study). The rank, segment name (topic), year, and mean grade are given.

The study identified the following common errors in *60 Minutes*' reporting:

- Omission of a balancing viewpoint or scientific perspective (33 segments)
- Omission of relevant quantitative data (34)
- Sensationalism or hype (29)
- Errors of implication (29)
- Unsupported assertions (28)
- Overreliance on anecdote (21)
- Omissions of principles of data evaluation (19)

An example of a clear misstatement or falsehood identified in the study was suggested in this referee comment about the 1993 program "Sharks Don't Get Cancer": "Lied that sharks don't get cancer. In fact, they not only get cancer, they get cartilage cancer." An example of "failure to provide proper context" was this referee comment on the 1990 segment "Is There Poison in Your Mouth?": "The segment failed to mention very important research supporting amalgam as safe. I know they had the research because I had sent it to them." An example of "*omission of a balancing viewpoint or* scientific perspective" was this referee comment on a 1990 segment, "The Spraying of LA," ranked 97th—dead last—in the study: "Segment failed to indicate the low toxicity of malathion. Segment failed to indicate that malathion breaks down to nontoxic compounds very quickly after it has been sprayed."

"The overall pattern of referees' responses in our study provides reason for concern about the consistency with which *60 Minutes* presents rational, scientifically defensible perspectives on health and medicine topics," the study's authors conclude. "Our data suggest a serious problem because *60 Minutes* is so widely acclaimed and trusted as a source of health information."

60 Minutes Executive Producer Don Hewitt did not respond to an invitation by the SKEPTICAL INQUIRER to comment on the ACSH study.

The study is published in *Technology: A Journal of Science Serving Legislative, Regulatory, and Judicial Systems*, and is available from the ACSH Web site (www.acsh.org). London, a CSICOP scientific consultant, also provides a personal summary of the study in ACSH's magazine *Priorities for Health* (Vol. 12 No. 1, 2000). ACSH is a public health, consumer-education consortium of more than 300 scientists and physicians based in New York.

—*Kendrick Frazier*

Kendrick Frazier is Editor of the SKEPTICAL INQUIRER.

Lowest-Ranked Segments (worse than 1.0 mean grade)

Rank	Segment Name (Topic)	Year	Mean Grade
81	"Sharks Don't Get Cancer" (shark cartilage treatment of cancer)	1993	0.9
83	"Body Snatchers?" (health of nuclear weapon factory workers)	1991	0.8
83	"What About Apples?" (second of two segments on Alar; the first was on legal hold—transcript was unavailable)	1989	0.8
83	"Smile Darn You, Smile" (psychoneuroimmunology and cancer)	1987	0.8
87	"Reading by the Colors" (tinted lenses to treat dyslexia)	1989	0.7
87	"No MSG" (monosodium glutamate)	1991	0.7
87	"The Spraying of Moundville" (of Tordon 101, herbicide)	1983	0.7
87	"1 Out of 3 (Chickens)" (salmonella)	1987	0.7
87	"Water, Water Everywhere" (well water contamination)	1981	0.7
90.5	"Danger" (health of uranium processing plant workers)	1991	0.5
90.5	"Doc Willard's Wonder Water" (special water said to have healing properties)	1981	0.5
94	"The Establishment vs. Dr. Burton" (immunoaugmentative therapy against cancer)	1980	0.3
94	"Another Karen Silkwood?" (worker exposure to asbestos and other chemicals)	1992	0.3
94	"Is There Poison in Your Mouth?" (amalgam fillings)	1990	0.3
94	"Just Say Yes" (methadone maintenance)	1993	0.3
94	"PTSD" (post-traumatic stress disorder)	1988	0.3
97	"The Spraying of LA" (of Malathion against Med flies)	1990	0.0

Three More Little Adventures on the Voodoo Science Front

Almost always at least one item in Robert Park's weekly American Physical Society "What's New" electronic newsletter relates directly to concerns of the SKEPTICAL

INQUIRER, but with one recent newsletter (August 18) the first three items were all pertinent. Here they are, with Park's approval.— EDITOR

1. Null Hypothesis: Do Astronauts Suffer Magnetic Deficiency? I must tell you, I bought a pair of Florsheim MagneForce shoes this week (WN 11 August 00). I have not been sick since. More on my new shoes in a later issue. Today, I want to share another Gary Null quote from the free brochure Florsheim gave me (at $125 the shoes were not free): "90–95% of health problems astronauts experienced after early space flights were eliminated when magnets were put in space suits and space capsules to counter the effects of traveling outside the earth's magnetic field." That's remarkable, since early flights never got beyond low-Earth orbit where the field is essentially unchanged. Nevertheless, we felt obliged to ask NASA. Answer: There has never been a magnet in a space suit.

2. Blacklight: Suit Against the Patent Office Fails. BlackLight Power's plans to go public with an estimated $1 billion stock offering are presumably on hold. You may recall that on 15 February BLP was awarded a patent on a process for putting hydrogen atoms into a "state below the ground state," shrinking them into teeny little things called "hydrinos" (WN 18 February 00). A second patent dealing with hydrino chemistry was set for issuance two weeks later. But on 17 February the Patent Office withdrew the second patent, and opened up the first for reexamination. One patent official was concerned that the BLP technology involves perpetual motion and "cold fusion." With its intellectual property somewhere in patent purgatory, BlackLight filed suit in Federal Court against the Commissioner of Patents. Tuesday, Judge Emmet Sullivan ruled the Patent Office action was "neither arbitrary nor capricious."

3. Infinite Energy: EEOC Rules That Cold Fusion Is a Religion. Paul LaViolette was terminated by the Patent Office on April 1999. He had been recruited by patent examiner Tom Valone, who issued an e-mail appeal for "all able-bodied free energy technologists" to "infiltrate" the Patent Office (*Science*, V. 284, p. 1254, May 99). It was Valone, you will recall, that organized the much-traveled Conference on Future Energy (WN 30 April 99). Claiming he was fired because of his belief in cold fusion, LaViolette turned to the Equal Employment Opportunities Office. He argued that his belief in cold fusion amounted to a religious belief. Actually, LaViolette believes in lots of stuff, like the B-2 bomber relies on anti-gravity technology (WN 20 November 98). Anyway, on 7 July the EEOC ruled that cold fusion is indeed protected religious belief. This appears to confirm what many have been saying all along.

—Robert L. Park

Physicist Robert L. Park is author of Voodoo Science, *excerpted in our September/October 2000 issue.*

Reincarnation Watch Fails After Four Days

Would she come back to life? The sister and friends of a woman who died in a Santa Fe, New Mexico, apartment August 9 kept her in a room for four days, hoping she would come back to life in reincarnated form.

"They all believe in spiritual healing and they were all waiting for that healing to occur through reincarnation," said Deputy Police Chief Beverly Lennen.

"They believed that their religion rather than medication would heal them," Lennen said. "Upon the one female's death, they gave her a period for reincarnation to occur, and when that did not occur, they notified us."

The dead woman was Linda Washburn, 50. Her 52-year-old sister called police on August 13, four days after the death.

—Kendrick Frazier

Kansas Vote Ousting Creationist Board Members Helps Restore Science Standards

Creationists' controversial campaign in Kansas to downgrade evolution in the state's science standards came to a crashing halt when voters chose three candidates for the Kansas Board of Education who had promised to back science standards with a greater emphasis on evolution.

That widely watched vote came in the Republican primaries, and Kansas is a heavily Republican state. The upcoming November 7 general election will match the four primary winners with four Democrats who also want to reverse the weakened guidelines approved by the board 6 to 4 last year. That vote outraged scientists and educators in Kansas and throughout the nation concerned about creationists' efforts to remove evolution from topics on which students are to be tested. The creationists' strategy was clearly designed to discourage teachers from teaching evolution, perhaps the key unifying principle of biological science.

Educators and other concerned citizens had in the ensuing year waged a strong campaign to educate voters about the issue and reverse the decision.

"I think it's a foregone conclusion that we get a new set of science standards in January," said Bill Wagnon, a Democrat board member who opposes the weakened standards. He did not have a contested primary but will face a Republican who supports them. Five of the 10 board seats will be filled in November.

In the August 1 primary election, board chairwoman Linda Holloway, who supported the new standards last year and spent thousands in her re-election campaign, was defeated by Sue Gamble, a moderate who ran on a pro-science education plank. "I think parents want their kids to have a strong, competitive education," said Gamble after her victory. "The message was that that includes a full set of science standards, and that that includes evolution."

"I am relieved, and I'm also thinking

that we're back onto the road to reality and sanity," said Al Frisby, a high school biology teacher in the suburbs of Kansas City. Frisby said as a result of the new standards "my life turned upside down." He found ways to innovate in his class to demonstrate how evolution works. He joined the American Civil Liberties Union and Kansas Citizens for Science, a group formed to fight the weakened standards.

The vote heartened scientists and educators and reverberated throughout the nation.

—*K.F.*

'Prophet for Profit' Describes New Cult Leader O'Brien

Claims of miraculous phenomena brought Ronald J. O'Brien worldwide attention. In December 1998 the Keene, New Hampshire, resident reported to his local newspaper that religious pictures and crucifixes in his home were "weeping" oil. Soon, consecrated hosts (Communion wafers) that he had taken from his Catholic church began to exude "blood," and in time thousands of hosts "miraculously" appeared.

Thousands made pilgrimages to O'Brien's home, and crowds gathered in his back yard to hear messages—allegedly relayed directly from God—at 3:00 P.M. each Saturday and Sunday. O'Brien formed an organization called Friends of the Eucharist, and his Web site received over 108,000 hits from some eighty-five countries. O'Brien urged his followers to form a holy army called the Sons of the Light whose purpose would be to defend what he

Science Educators Rebut Creationist-friendly *Wall Street Journal* Column

When in the wake of the Kansas primary election the *Wall Street Journal* published a curious op-ed column ("The New Fundamentalism," by Greg Easterbrook, August 8, 2000), saying the Kansas Board of Education had only wanted to omit part, not all, of natural selection theory and calling intelligent design "a sophisticated theory now being argued out in the nation's top universities," scientists and others mounted a strong reaction.

"As a science educator in Kansas," wrote Phil Baringer, a University of Kansas physicist, in the lead letter published in the August 15 *Wall Street Journal*, "I find no merit in the notorious actions of our State Board of Education." Baringer notes that the column admits that the board was wrong on "some points" but finds there was "valid substance behind its thinking."

"I suggest Mr. Easterbrook look again at what the board actually did," writes Baringer. "A few of its members took an excellent set of science standards that had been drafted by a 27-member panel of science education experts and turned it over to a local group of creationists for revision. Evolution, the Big Bang theory, and geologic time were edited out of the standards because these scientific findings conflicted with the local creationists' interpretation of Genesis. . . ."

"Whatever your view, whether you see evolution as affirming God or denying God, it is important to distinguish religious and philosophical questions from scientific ones. Some Kansas school board members didn't make this distinction and were rightly thrown out of office for it."

Another published letter, by Robin Kral, countered Easterbrook's seeming endorsement of so-called "intelligent design." Wrote Kral: "He states that intelligent design is a hotly debated topic in universities today, as if biology departments were divided on the issue. In fact, essentially all of the proponents of intelligent design are non-scientists who object to evolutionary theory on religious grounds. . . . The proponents of intelligent design have by-passed the scientific method and the requirements of logic.They do not deserve to be taken seriously."

Not all the letters submitted were published. Gary L. Bennett, who keeps track of creationist actions nationwide from Emett, Idaho, sent this letter (in part): "Contrary to what Mr. Easterbrook would have his readers believe, there is no debate in the scientific community about intelligent design because their is no evidence for it. What [he] failed to mention is that when the cloak worn by intelligent design advocates is removed one exposes the same old biblical creationists."

Terry Maley, a geologist, wrote: "Intelligent design . . . is not a theory in science (it is a failed hypothesis), it is not new, and it has no mainstream scientific support. . . . It has been well-known for several decades that intelligent design is just another term for 'creation science.' This fact was noted in 1997 by the Federal district court for Louisiana in *Freiler* v. *Tangipahoa* Parish Board of Education. When the creationists lost the numerous court battles for legislation to get creation science education time with evolution in the public schools, they simply changed the name back to intelligent design. Intelligent design, as an explanation of the natural world, simply does not exist in the mainstream scientific literature."

The *Wall Street Journal*'s editorial pages have been showing a pro-creationist leaning lately. Last year they published an op-ed column touting intelligent design by creationist law professor Phillip Johnson. (For more see Joe Levee, "The *Wall Street Journal* Gets Religion," Spring 1999 *Free Inquiry*.)

—*K.F.*

viewed as true Catholicism.

Among O'Brien's concerns was women's place in the home, society, and church. He was especially upset that the Roman Catholic church now permitted women on the altar. "Take off the pumps, the short skirts and come home to your family and be obedient to your husband," he said. "If you don't do that, I will stack up your bodies. That is what God is saying." Denounced by the local diocese, O'Brien stated: "The church is the whore of Babylon and the priests are pimps. God the Father said so."

In 1999 Ron O'Brien exhibited a plastic bag containing a figurine of the Virgin Mary, which he claimed exuded oil.

Claiming God was speaking through him, O'Brien announced that between January 19 and 31, 2000, God would issue a warning to mankind, heralded by the appearance of a black cross in the sky. Unfortunately for O'Brien's credibility, the appointed time passed without the prophesied sign. Worse, there came revelations about his past.

From the beginning, O'Brien's activities, claims, and pronouncements had been monitored by Bryan Rourke, a reporter with New Hampshire's oldest newspaper, *The Keene Sentinel*. Rourke produced a series of insightful articles on the professed prophet—with occasional input from CSICOP. Then, in headlines on January 4 and 6, Rourke announced, "Prophet guilty of fraud" and "Documents expose 'prophet.'"

Contacted by "unnamed sources," Rourke reported, the FBI had looked into O'Brien's background. His real name was Ronald J. Woodruff. When he claimed (in a résumé submitted for a city job) that during 1991 and 1992 he had been serving as a U.S. Navy commander, he was actually serving the government in a different capacity: as a federal prisoner. Arrested by the Secret Service for credit-card fraud, an offense involving interstate commerce and therefore a federal crime, O'Brien pleaded guilty and served thirteen months in the Federal Correction Institution at Butler, North Carolina.

In an investigative coup, Rourke uncovered evidence that O'Brien's Communion hosts "were not heaven-sent, but store-bought." *The Sentinel* obtained copies of invoices showing that in mid-1999 O'Brien purchased 9,225 hosts from two church-supply houses.

Moreover, forensic tests at the New Hampshire State Police laboratory in Concord indicated that the red substance appearing on many of O'Brien's hosts was not blood of any kind, although its actual composition was not immediately identified. A Keene police detective, Sgt. Frederick B. Parsells, said: "If I can get a victim and have probable cause he [O'Brien] committed a crime, it would be theft by deception. If he presented these hosts as the body and blood of Christ and said they were miraculous, and people gave him money based on that representation, that would be wrong."

O'Brien—who moved to Ireland in October 1999 with his wife and stepchildren—reportedly received over $100,000 in donations from his followers. And one convert, a Florida stockbroker, purchased a host for $3,333.33 (that is, Jesus' presumed age of 33, thrice repeated). Most of his followers, reports Bryan Rourke, dismiss the revelations about O'Brien's past and continue to put their trust in him.

A cult expert, Rick A. Ross of Phoenix, Arizona, dubbed O'Brien "a prophet for profit" and compared him to cult leaders like Jim Jones, David Koresh, and Marshall Applewhite, noting: "The focus of the group is increasingly becoming O'Brien himself. You see a cult-like pattern."

He added: "The mentality he is fostering is, 'We are of the light; the church will be sorry and suffer,' implying those outside are in the darkness. This is very typical. There is a sharp line drawn for those in the organization who submit to his views and those on the outside. This is the philosophy of all cult leaders."

O'Brien had also announced that on April 13, 2000, there would be a miraculous healing of everyone who gathered in the village of Garabandal, Spain. (There, in 1961, four schoolgirls claimed to communicate with the Virgin Mary before large crowds. The girls eventually confessed that their "trances" and "visions" had only been pretended, but later three of the four retracted their retractions.) O'Brien warned that if people failed to turn to God, four billion people would die. April 13 came and went and the only consequence seems to have been the further diminishing—if that were possible—of O'Brien's credibility.

—Joe Nickell

Joe Nickell is CSICOP's Senior Research Fellow. □

Fund for the Future

CSICOP AT THE CENTER FOR INQUIRY

CFI-International
Amherst, N.Y.

Promote CSICOP

Using the Media & Telecommunications to Promote Science and Reason

The Fund for the Future is a capital campaign to provide CSICOP with the resources needed to more effectively influence media and public opinion. The 90s were defined by a telecommunications revolution, along with an explosion of misinformation available to the scholar and citizen alike. The hunger for superstition, pseudoscience, the paranormal and miraculous solutions has never been more acute.

The Ten-Year Plan

CFI-Midwest
Kansas City, Mo.

Contributions are needed for current priorities:

- Increased media appearances by skeptical spokespersons
- Press releases, opinion pieces and media alerts
- Greater exposure through the Internet, including webcasting
- National initiatives coordinated by the Council for Media Integrity
- Instructional materials introducing skepticism to elementary and secondary school students
- Video production

How Can You Help?

CFI-West
Los Angeles, Ca.

CSICOP has established its expertise and integrity. It's time to command more media attention and a larger audience. The Center for Inquiry Fund for the Future is about new methods of outreach and broader influence, and is driven by an ambitious ten-year strategic plan for growth.

We depend on the support of readers and friends to continue leading the international skeptical movement. Gifts to the Fund for the Future provide the resources we need to respond to today's challenges.

All gifts are gratefully accepted. The Fund for the Future welcomes gifts of encouragement and major investments.

Cash contributions and gifts of stock are needed for immediate growth and new initiatives. We also offer a range of planned giving opportunities, from bequests to assorted tax-advantaged trusts and pooled funds. Planned gifts support our work in the future and can provide an income stream for you and a beneficiary. You may also make a gift supporting the general endowment, or establish a special purpose fund underwriting a long-term project that expresses your personal interests and commitment to skepticism.

In today's stock market, gifts of highly appreciated securities offer particular advantages to the donor. When donating stock to a charitable organization, you avoid taxes and maximize the impact of the asset you are donating.

Contact Anthony Battaglia at (716) 636-7571 ext. 311 or via e-mail at CFIANTHONY@AOL.COM to discuss accomplishing your philanthropic and financial goals and contributing to the Fund for the Future.

Bill Nye "The Science Guy," Joe Nickell, and entertainer Steve Allen appear on a radio show.

CSICOP
at the Center for Inquiry
P.O. Box 703
Amherst, NY 14226-0703
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Fax (716) 636-1733

Co-chairs of the Fund for the Future Campaign: above, author and TV personality Steve Allen; below, author and critic Martin Gardner.

Council for Media Integrity

Formed just weeks after its inclusion in the Ten-Year Plan, the Council for Media Integrity monitors and challenges media programs that convey unfounded claims and mislead the public about science. Members include Steve Allen (co-chair), E. O. Wilson, Stephen Jay Gould, and many others. CSICOP will invest in electronic infrastructure to facilitate rapid response to irresponsible programs.

Enhanced Library Resources

The Center for Inquiry's skeptics' library—already the finest of its kind in the world—needs additional funding to enlarge its core collection and add electronic media. Worldwide modem access to the library's catalog is already nearly complete.

Adult Education

The Council cosponsors the Center for Inquiry Institute, which has already expanded its offerings to include a new three-year certificate program in science and skepticism. Courses are scheduled in Amherst, Los Angeles, and other cities.

Regional Outreach

With the establishment of The Center for Inquiry–West (Los Angeles), The Center for Inquiry–Midwest (Kansas City) and The Center for Inquiry–Rockies (Boulder, Colorado), giant steps have been taken to enhance direct field service to skeptical activists. Additional regional centers are planned, with expanded calendars of activities.

Focusing Upon the Young

To present the skeptical message more compellingly to the young, CSICOP will develop new materials—ranging from age-appropriate print publications to audio and video cassettes and instructional coursework. Goals include enhanced understanding of science and improved critical thinking skills.

The Brutality of Dr. Bettelheim

Dr. Bruno Bettelheim
Devoted most of his time
Condemning mothers to perdition
By blaming them for their autistic child's condition.

Friend Armand T. Ringer composed the above clerihew after reading a first draft of this column. It is an accurate statement about the enormous harm that can be done by dogmatic, closed-minded Freudians.

Estimates of the number of children afflicted with a broadly defined autism vary from one in a thousand to one in 250. It is more common than Down syndrome. Boys outnumber girls four to one. Symptoms start to appear when a child approaches two, but often are not recognized as autistic until the child begins school. Autistic children look deceptively normal, and many are very beautiful.

Like almost all mental illnesses, autism has a spectrum of symptoms that range from mild to severe. Severe autism has the following traits:

1. Children with autism are self-absorbed ("auto" is Greek for "self"). They live inside a glass shell, hardly recognizing the existence of their parents or others. They are unresponsive to affection and incapable of normal social relationships.

Martin Gardner's two-volume Annotated Alice *has recently been reprinted in a one-volume edition.*

2. They seldom make eye contact, and rarely point to anything. Many refuse to talk or they speak only in brief sentences. Some speak fluently but in repetitive sentences. They are unable to maintain a normal conversation.

3. About 80 percent are mentally retarded.

4. Their behavior is bizarre. They are prone to a wide variety of repetitive rituals such as banging their head, flapping their arms, slapping their face, pulling their hair, or rocking back and forth. They can spend hours repeating such mindless tasks as running sand through their fingers in a sandbox, typing a single key on a typewriter, or spinning objects on the floor or in their hands. The slightest change in their experience, such as a mother wearing a different dress, or a toy moved to a different spot, can trigger a severe tantrum.

5. Some autistic adults resemble idiot savants in developing curious skills such as memorizing a phone book, an ability to multiply large numbers or identify huge prime numbers, or quickly memorize complicated musical scores. Some become obsessed with calendars and can correctly name the day of the week for any given date. Some rapidly solve jigsaw puzzles even when the pieces are picture-side down. Such strange abilities, along with the usual self-absorption, were featured in the movie *Rain Man*, a film in which Dustin Hoffman takes the role of Raymond, an autistic middle-aged man.[1]

"Joey: A Mechanical Boy," by Dr. Bruno Bettelheim (*Scientific American*, March 1959), is a famous article about an autistic child who thought he was a robot. He would construct all sorts of weird machines around his bed, and repeatedly connect himself to them to obtain power for running himself. It would be interesting to know Joey's later history.

Autism is a mysterious malady whose causes are not known. There are several competing theories, none confirmed, but all recognize that autism is a brain disorder probably caused by a set of malfunctioning genes. If one of a pair of identical twins is autistic, the other twin will be autistic about 65 percent of the time. The most persistent myth about autism is that there is a normal child inside the shell desperately wanting to emerge if only the shell can be shattered. There is no normal child inside the shell.

For a report on recent research into the causes of autism, see "The Early Origins of Autism," by Patricia Rodier, professor of obstetrics at the University of Rochester, in *Scientific American*, February 2000, pages 56–63. See also Uta Frith's earlier article "Autism," in the same magazine, June 1993. A London psychologist, Frith is also the author of *Autism: Explaining the Enigma* (1989).

Evidence that autism is in any way

related to how parents behave is unconvincing, nor is there evidence that it is related, as so many parents foolishly believe, to early vaccinations. Marian DeMeyer, an Indiana University psychiatrist, made a careful study of three groups: parents with an autistic child, parents with normal children, and parents with a brain-damaged child. Personality tests showed that the three groups were indistinguishable. (See DeMeyer's paper in *The Journal of Autism and Childhood Schizophrenia*, Vol. 2, 1972, pages 49–66.) More recent work, I am told, has cast doubt on DeMeyer's findings.

Siblings of autistic children are normal. The percentage of children with autism is the same in all cultures, and among all racial, ethnic, and socioeconomic groups. Medication and therapy help mildly autistic children lead normal lives, but for severe autism no cures are known.

Strong evidence that autism is a dysfunction of the brain has been available for half a century, and was taken for granted by neurologists outside the Freudian tradition. For a while it was called childhood schizophrenia. However, psychoanalysts and amateur Freudians persisted for decades in the fantasy that autism was somehow caused by unloving parents, especially by cold "refrigerator mothers." The leading advocate of this absurd view was Dr. Bruno Bettelheim (1903–1990).

Bettelheim was a small, bald, nearsighted man with thick glasses and a strong Austrian accent. He liked to tell people he was so ugly that when his mother first saw him after his birth she exclaimed "Thank God it's a boy!" Born in Vienna to a Jewish father who died of syphilis, Bettelheim claimed to have studied under Freud. Although he was briefly psychoanalyzed in Vienna, he was not trained as an analyst. He never claimed to be a psychiatrist of any sort —only a psychologist. His doctorate in Austria was on the aesthetics of nature.

Arrested by the Nazis, Bettelheim spent a year in Nazi concentration camps, first at Dachau, then at Buchenwald. This was before they became extermination centers. Released in 1939, he came to the United States where he was given a job teaching at Rockford College for women, near Chicago, and later at the University of Chicago. In 1994 he took over the University of Chicago's decaying Sonia Shankman Orthogenic School for disturbed children, which he headed from 1944 to 1978. During this period he became one of the country's most respected experts on childhood pathology.

Bruno Bettelheim. Univ. of Chicago Library

Bettelheim wrote eleven books, numerous articles in technical and popular journals, and an advice column that ran for ten years in *The Ladies Home Journal*. He lectured everywhere, and even appeared as a psychiatrist in Woody Allen's 1983 film *Zelig*.

In 1983 Bettelheim retired from the Orthogenic School, or Bruno's Castle as it was sometimes called, and moved to California. He had early on been divorced from Gina, his first wife. His second wife Gertrude died in 1984 after forty-three years of a happy marriage and three children. After a stroke in 1987, Bettelheim moved to a retirement home, which he despised, in Silver Spring, Maryland. In 1990, ill, lonely, and depressed over a rift with his daughter Ruth, he overdosed on sleeping pills, fastened a plastic bag over his head, and died.

Critics pointed out that Bettelheim alone diagnosed autism and he alone evaluated "cures." Most of his cures, they charged, were of children who were not even autistic or only mildly so.

After his suicide, evidence of Bettelheim's dark side began to emerge. Although many of his counselors at the Orthogenic School considered him brilliant and admirable, others began openly to call him a cruel, egotistical tyrant, the guru of a cult, and a power-mad mountebank.

Evidence accumulated that Bettelheim exaggerated his bravery in the concentration camps, and lied when he said that Eleanor Roosevelt had helped him escape. He claimed an 85 percent cure rate of autistic children in his care, a boast no other psychiatrist came close to making. Critics pointed out that Bettelheim alone diagnosed autism and he alone evaluated "cures." Most of his cures, they charged, were of children who were not even autistic or only mildly so.

Although untrained in analysis, Bettelheim was a Freudian fundamentalist. Counselors reported that every trivial incident that occurred in his school, such as a child breaking a dish or unintentionally hitting another child with a rubber ball, was taken by Bettelheim to be an unconscious expression of hostility. He was given to outbursts of anger and frequently slapped children. Alida Jatich, a patient for seven years who became a computer programmer in Chicago, published an article in *The Chicago Reader* (a weekly newspaper) in which she said Bettelheim once dragged her naked and dripping from a

shower and slapped her repeatedly in front of her dorm mates. In her words:

> In person, he was an evil man who set up his school as a private empire and himself as a demigod or cult leader. He bullied, awed, and terrorized the children at his school, their parents, school staff members, his graduate students and anyone else who came into contact with him.

Roger Angres, another former patient, in an article for *Commentary* (October 1990), described what he called Bettelheim's "insulting and intimidating theatrics." He insulted children, Angres wrote, "just in order to break any self-confidence they might have. I lived in terror of his beatings, in terror of his footsteps in the dorm."

You can imagine the desolation felt by mothers when they were told they had created their child's pathology. Annabel Stehli, one of many such mothers, read Bettelheim's book about autism, *The Empty Fortress* (1967), a book his detractors called The Empty Book. In *The Sound of a Miracle* (1991), Stehli described her reaction this way:

> I was carrying around this terrible secret. I didn't want to talk to anyone about Bettelheim. My husband said that he thought it was baloney, but I didn't talk to my friends about it. I was very alone. I really felt as if I had a scarlet letter on, only the "A" was for "Abuse."
>
> I felt that I'd hurt Georgie in some subtle way that I couldn't grasp, *and if I could just figure it* out, then maybe she'd be okay. There was a part of me that *wanted* to believe Bettelheim, because that would mean that if I got better, Georgie would get better.

You can imagine the desolation felt by mothers when they were told they had created their child's pathology.

The degree of Bettelheim's cruelty toward patients was mild compared to his cruelty toward mothers. For a detailed account of this I recommend science writer Edward Dolnick's excellent, hard-hitting *Madness on the Couch: Blaming the Victim in the Heyday of Psychoanalysis* (Simon and Schuster, 1998). It is one of a raft of recent books exposing psychoanalysis as one of the most monumental pseudosciences of the last century. What follows is taken mainly from Dolnick's book.

Bettelheim was convinced, in spite of overwhelming evidence to the contrary, that autism had no organic basis but was caused entirely by cold mothers and absent fathers. "All my life," he wrote, "I have been working with children whose lives have been destroyed because their mothers hated them."

Again: "The precipitating factor in infantile autism is the parent's wish that his child should not exist."

In the mid-fifties Bettelheim adopted a policy known as "parentectomy." Under this policy, parents were not allowed to see their children for at least nine months!

A typical bit of Freudian nonsense in Bettelheim's *Empty Fortress* was how he explained a child's obsession with weather. The child broke down the word "weather," unconsciously of course, into "we/eat/her." It's hard to believe, but Bettelheim actually wrote: "Convinced that her mother (and later all of us) intended to devour her, she felt it imperative to pay minutest attention to this 'we/eat/her'."

Other Freudian analysts, as well as scientists who were not psychiatrists, followed Bettelheim in blaming the poor mothers for their child's autism. Psychologist Harry Harlow's research with monkeys who were deprived of mothers convinced him that autism was caused by icebox mothers. Dutch zoologist Nikolaas Tinbergen, who for his study of bird behavior shared a 1973 Nobel Prize in medicine with zoologist Konrad Lorentz and Karl von Frisch, also fell for the preposterous cold mother theory. He actually wrote a book titled *Autistic Children: New Hope for a Cure* (1983). And what was the cure? It was constant hugging of children by their mothers!

Dolnick records an ironic twist to all this. Psychiatrists Maurice Green and David Schecter, in several technical papers, argue that autism is caused not by cold mothers, but by mothers who love a child too much! They give a milk bottle before a child asks for it, or a toy before he or she wants it. By excessive anticipation of their child's needs, the child naturally doesn't bother to speak and remains a permanent infant.

There are two biographies of Bettelheim. Richard Pollak, former literary editor of *The Nation*, published *The Creation of Dr. B* in 1997. It's a bitter attack on Bettelheim, who was called Dr. B by his patients and counselors. Nina Sutton's *Bettelheim: A Life and a Legacy* (1996), translated from the Greek, is more balanced. She sees Bettelheim as a complex man with both good and bad qualities. A hostile account of a character called "Dr. V" is in Tom Wallace Lyons's autobiographical novel *The Pelican and After* (1983). Lyons was a former patient of Bettelheim

Bernard Rimland, a psychologist and father of his autistic son Mark, is the author of *Infantile Autism* (1964), another slashing attack on Bettelheim. Dolnick devotes several pages to Mark, an amiable man who has managed to adjust to life. Mark is one of those autistics who can name the day of the week for any date, but is unable to explain how he knows. When Bettelheim died, Rimland's comment reflected the opinions of almost all authorities on autism. "He will not be missed."

My next column will be about Facilitated Communication, a crazy development involving autistic children that is almost as sad and deplorable as Bettelheim's attacks on refrigerator mothers.

Note

1. Such abilities can be greatly exaggerated. For example, a *Newsweek* cover story "Understanding Autism" (July 31, 2000), cited an autistic savant who could memorize a phone book in ten minutes. No one can even *read* a phone book in ten minutes, let alone memorize it. □

The Flatwoods UFO Monster

In modern police parlance a long-unsolved homicide or other crime may be known as a "cold case," a term we might borrow for such paranormal mysteries as that of the Flatwoods Monster, which was launched on September 12, 1952, and never completely explained.

About 7:15 P.M. on that day, at Flatwoods, a little village in the hills of West Virginia, some youngsters were playing football on the school playground. Suddenly they saw a fiery UFO streak across the sky and, apparently, land on a hilltop of the nearby Bailey Fisher farm. The youths ran to the home of Mrs. Kathleen May, who provided a flashlight and accompanied them up the hill. In addition to Mrs. May, a local beautician, the group included her two sons, Eddie 13, and Freddie 14, Neil Nunley 14, Gene Lemon 17, and Tommy Hyer and Ronnie Shaver, both 10, along with Lemon's dog.

There are myriad, often contradictory versions of what happened next, but UFO writer Gray Barker was soon on the scene and wrote an account for *Fate* magazine based on tape-recorded interviews. He found that the least emotional account was provided by Neil Nunley, one of two youths who were in the lead as the group hastened to the crest of the hill. Some distance ahead was a pulsing red light. Then, suddenly, Gene Lemon saw a pair of shining, animal-like eyes, and aimed the flashlight in their direction.

The light revealed a towering "man-like" figure with a round, red "face" surrounded by a "pointed, hood-like shape." The body was dark and seemingly colorless, but some would later say it was green, and Mrs. May reported drape-like folds. The monster was observed only momentarily, as suddenly it emitted a hissing sound and glided toward the group. Lemon responded by screaming and dropping his flashlight, whereupon everyone fled.

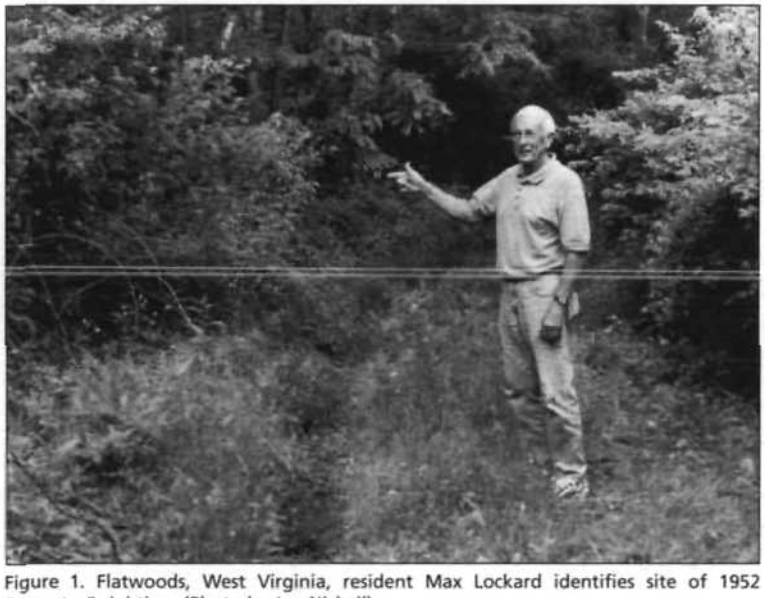

Figure 1. Flatwoods, West Virginia, resident Max Lockard identifies site of 1952 "monster" sighting. (Photo by Joe Nickell)

The group had noticed a pungent mist at the scene and afterward some were nauseated. A few locals, then later the sheriff and a deputy (who came from investigating a reported airplane crash), searched the site but "saw, heard and smelled nothing." The following day A. Lee Stewart, Jr., from the *Braxton Democrat* discovered "skid marks" in the roadside field, along with an "odd, gummy deposit"—traces attributed to the landed "saucer" (Barker 1953).

In his article Barker (1953) noted that "numerous people in a 20-mile radius saw the illuminated objects in the sky at the same time," evidently seeing different objects or a single one "making a circuit of the area." Barker believed the Flatwoods incident was consistent with other reports of "flying saucers or simi-

Joe Nickell is CSICOP's Senior Research Fellow and author of numerous investigative books.

lar craft" and that "such a vehicle landed on the hillside, either from necessity or to make observations." (At this time in UFOlogical history, the developing mythology had not yet involved alien "abductions.")

In addition to Barker's article and later his book (1956), accounts of the Flatwoods incident were related by another on-site investigator, paranormal writer Ivan T. Sanderson (1952, 1967), as well as the early UFOlogist Major Donald E. Keyhoe (1953). More recent accounts have garbled details, with Brookesmith (1995), for example, incorrectly reporting five of the children as belonging to Mrs. May, and Ritchie (1994) referring to the monster's hoodlike feature as a "halo," which he compared with those in Japanese Buddhist art. However, Jerome Clark's *The UFO Encyclopedia* (1998) has a generally factual, sensible account of the affair, appropriately termed "one of the most bizarre UFO encounters of all time."

If the UFO was not a spaceship but a meteor, then how do we explain the other elements—the pulsating light, the landing traces, the noxious smell, and, above all, the frightening creature?

The UFO

On June 1, 2000, while on a trip that took me through Flatwoods, I was able to stop off for an afternoon of on-site investigating. I was amused to be greeted by a sign announcing, "Welcome to/Flatwoods/Home of/the Green Monster." Although the village has no local library, I found something even better: a real-estate business, Country Properties, whose coowners Betty Hallman and Laura Green generously photocopied articles for me and telephoned residents to set up interviews.

Johnny Lockard, 95, told me that virtually everyone who had seen the alleged flying saucer in 1952 recognized it for what it was: a meteor. He, his daughter Betty Jean, and her husband Bill Sumpter said that the fireball had been seen on a relatively horizontal trajectory in various states. In fact, according to a former local newspaper editor, "There is no doubt that a meteor of considerable proportion flashed across the heavens that Friday night since it was visible in at least three states—Maryland, Pennsylvania, and West Virginia" (Byrne 1966). The meteor explanation contrasts with the fanciful notions of Sanderson (1967). He cites several persons who each saw a *single* glowing object. Although observing that "All of the objects were traveling in the same direction and apparently at the same speed and at exactly the same time," he fails to draw the obvious conclusion: that there was one object, albeit variously described. (For example, one report said the object landed on a nearby knoll, while another described it as "disintegrating in the air with a rain of ashes.") Instead of suspecting that people were mistaken or that they saw a meteor that broke apart, Sanderson asserts that "to be logical" we should believe that "a flight of aerial machines" were "maneuvering in formation." For some reason the craft went out of control, with one *landing*, rather than crashing, at Flatwoods, and its pilot emerged "in a space suit." Observed, it headed back to the spaceship which—like two others that "crashed"—soon "vaporized" (Sanderson 1967).

Such airy speculations aside, according to Major Keyhoe (1953), Air Force Intelligence reportedly sent two men in civilian clothes to Flatwoods, posing as magazine writers, and they determined that the UFO had been a meteor that "merely appeared to be landing when it disappeared over the hill." That illusion also deceived a man approximately ten miles southwest of Flatwoods, who reported that an aircraft had gone down in flames on the side of a wooded hill. (That was the report the sheriff had investigated, without success, before arriving at the Flatwoods site.)

Keyhoe's sources told him that "several astronomers" had concluded that the UFO was indeed a meteor. As well, a staff member of the Maryland Academy of Sciences announced that a meteor had passed over Baltimore at 7 P.M. on September 12, "traveling at a height of from 60 to 70 miles" (Reese 1952). It was on a trajectory toward West Virginia, where the "saucer" was sighted minutes later.

Spaceship Aground?

If the UFO was not a spaceship but a meteor, then how do we explain the other elements—the pulsating light, the landing traces, the noxious smell, and, above all, the frightening creature? Let us consider each in turn.

As the group had proceeded up the roadway that led to the hilltop, they saw "a reddish light pulsating from dim to bright." It was described as a "globe" and as "a big ball of fire" (Barker 1953), but Sanderson (1967) says they "disagreed violently on their interpretation of this object." We should keep in mind that it was an unknown distance away—and that there was no trustworthy frame of reference from which to estimate size (reported to Sanderson as over twenty feet across).

Significantly, at the time of the incident, a local school teacher called attention to "the light from a nearby plane beacon," and Sanderson (1952) conceded that there were three such beacons "in sight all the time on the hilltop." However, he dismissed the obvious possibility that one of these was the source of the pulsing light because he was advocating an extraterrestrial explanation.

But if a UFO had not landed at the site, how do we explain the supposed landing traces? They were found at 7 o'clock the morning after the incident by A. Lee Stewart, Jr., editor of *The Braxton Democrat*, who had visited the site the night before. Stewart discovered two parallel "skid marks" in the tall meadow grass, between the spot where

the monster was seen and the area where the red pulsating light was sighted. He also saw traces of "oil" or "an odd, gummy deposit" (Barker 1953).

Johnny Lockard's son, Max, describes Stewart in a word: "windy." Max had tried to explain to him and others the nature of the unidentified object that left the skid marks and oily/greasy deposit, namely Max's black, 1942 Chevrolet pickup truck. Soon after news of the incident had spread around Flatwoods that evening, Max drove up the hillside to have a look around. He told me he left the dirt road and circled through the field, but saw nothing, no monster and no landing traces in the meadow grass.

At the time of the incident a few locals who had been skeptical that a flying saucer had landed on the hill attributed the skid marks and oil to a farm tractor. When several others told Gray Barker that the traces had actually been left by Max Lockard, he recalled his old high school chum and decided to telephone him. They had a proverbial failure to communicate and Barker—who admitted to seeing "an opportunity to get my name in print again"—concluded that Max's truck had not been at the exact spot where the alleged UFO markings were found.

Reading Barker (1956), one senses his impulse to dismiss the tractor and pickup hypotheses and never even to consider the possibility of some other vehicle. It is not clear that Barker ever saw the traces. He arrived one week after the incident and during the interval rain had obliterated evidence. He could find "no trace of the oil reported to have been on the ground," and although he saw "marks and a huge area of grass trampled down," he conceded that could be due to the "multitudes" that had "visited and walked over the location" (Barker 1953, 1956).

Max Lockard took me to the site (figure 1) in his modern pickup. A locked gate across the road prompted him to shift into four-wheel drive and take us on a cross-country shortcut through a field, much as he had done in his search for the reported UFO and monster nearly a half century before. He has convinced me that he indeed left the supposedly unexplained traces.

Figure 2. Split-image illustration compares fanciful Flatwoods Monster (left) with the real-world creature it most resembles, the common barn owl (right). (Drawing by Joe Nickell)

With a twinkle in my eye I posed a question: "Max, had you ever piloted a UFO before?" His smile answered that he had not.

As to the nauseating odor, that has been variously described as a sulfurous smell, "metallic stench," gaslike mist, or simply a "sickening, irritating" odor. Investigators first on the scene noticed no such smell, except for Lee Stewart who detected it when he bent close to the ground. The effect on three of the youths, particularly Lemon, was later to cause nausea and complaints of irritated throats (Barker 1953, 1956; Sanderson 1967; Keyhoe 1953).

This element of the story may be overstated. Ivan Sanderson (1967), scarcely a militant skeptic, also noticed the "strange smell in the grass" but stated that it was "almost surely derived from a kind of grass that abounds in the area." He added, "We found this grass growing all over the county and it always smelt the same, though not perhaps as strongly." Keyhoe (1953) reported that the Air Force investigators had concluded that "the boys' illness was a physical effect brought on by their fright." Indeed Gene Lemon, the worst affected, had seemed the most frightened; he had "shrieked with terror" and fallen backward, dropping the flashlight, and later "appeared too greatly terrified to talk coherently" (Barker 1956). As to the strange "mist" that had accompanied the odor (Barker 1953), that seems easily explained. Obviously it was the beginning stage of what the sheriff subsequently noticed on his arrival, a fog that was "settling over the hillside" (Keyhoe 1953).

The Creature

Finally, and most significantly, there remains to be explained "the Flatwoods Monster," a.k.a. "the Phantom of Flatwoods," "the Braxton County Monster," "the Visitor from Outer Space," and other appellations (Byrne 1966). Many candidates have been proposed, but—considering that the UFO became an IFO, namely a meteor—the least likely one is some extraterrestrial entity. I think we can dismiss also the notion, among the hypotheses put forward by a local paper, that it was the effect of vapor from a falling meteor that took the shape of a man ("Monster" 1952). Also extremely unlikely was the eventual explanation of Mrs. May that what she had seen "wasn't a monster" but rather "a secret plane the government was working on" (Marchal 1966). (Both she and her son Fred declined to be interviewed for my investigation.)

I agree with most previous investigators that the monster sighting was not a hoax. The fact that the witnesses *did* see a meteor and assembled on the spur of the moment to investigate makes that unlikely. So does the fact that everyone who talked to them afterward insisted—as Max Lockard did to me—that the eyewitnesses were genuinely frightened. Clearly, something they saw frightened them, but what?

The group described shining "animal eyes," and Mrs. May at first thought they belonged to "an opossum or raccoon in the tree" (Barker 1956, Sanderson 1967). Locals continued to suggest some such local animal, including "a buck deer" (Barker 1956), but a much more credible candidate was put forth by the unnamed Air Force investigators. According to *Keyhoe* (1953), they concluded the "monster" was probably "a large owl perched on a limb" with underbrush beneath it having "given the impression of a giant figure" and the excited witnesses having "imagined the rest."

I believe this generic solution is correct, but that the owl was not from the family of "typical owls" (*Strigidae*, which includes the familiar great horned owl) but the other family (*Tytonidae*) which comprises the barn owls. Several elements in the witnesses' descriptions help identify the Flatwoods creature specifically as *Tyto alba*, the common barn owl, known almost worldwide (Collins 1959). Consider the following evidence.

The "monster" reportedly had a "man-like shape" and stood some ten feet tall, although Barker (1953) noted that "descriptions from the waist down are vague; most of the seven said this part of the figure was not under view." These perceptions are consistent with an owl perched on a limb (figure 2).

Also suggestive of an owl is the description of the creature's "face" as "round" with "two eye-like openings" and a dark, "hood-like shape" around it (if not the "pointed" appearance of the latter) (Barker 1953). The barn owl has a large head with a "ghastly," roundishly heart-shaped face, resembling "that of a toothless, hook-nosed old woman, shrouded in a closely fitting hood" and with an expression "that gives it a mysterious air" (Jordan 1952, Blanchan 1925).

Very evidential in the case of the Flatwoods Monster is the description of its cry as "something between a hiss and a high-pitched squeal" (Barker 1953). This tallies with the startling "wild, peevish scream" or "shrill rasping hiss or snore" of the barn owl. Indeed its "shrill, strangled scream is a most unbirdlike noise." Its "weird calls" include "hissing notes, screams," and "guttural grunts" (Blanchan 1925, Peterson 1980, Bull and Farrand 1977, Cloudsley-Thompson et al. 1983). The latter might explain the monster's accompanying "thumping or throbbing noise" (Barker 1953), if those sounds were not from the flapping of wings.

At the time of the incident a few locals who had been skeptical that a flying saucer had landed on the hill attributed the skid marks and oil to a farm tractor.

Descriptions of the creature's movement varied, being characterized as "bobbing up and down, jumping toward the witnesses" or as moving "evenly," indeed "describing an arc, coming toward them, but circling at the same time" (Barker 1956). Again, it had "a gliding motion as if afloat in midair." These movements are strongly suggestive of a bird's flight. When accidentally disturbed, the barn owl "makes a bewildered and erratic getaway" (Jordan 1952)—while hissing (Blanchan 1925)—but its flight is generally characterized with "slow, flapping wing beats and long glides" (Cloudsley-Thompson et al. 1983).

According to Barker (1953), "Not all agreed that the 'monster' had arms," but "Mrs. May described it with terrible claws." Sanderson (1967) cites the witnesses' observation that "the creature had small, claw-like hands that extended in front of it," a description consistent with a raptor (a predatory bird). The barn owl is relatively long-legged and knock-kneed, sporting sizable claws with sharp, curved talons that may be prominently extended (Peterson 1980, Forshaw 1998).

It is important to note that the youths and Mrs. May only glimpsed the creature briefly—an estimated "one or a few more seconds," and even that was while they were frightened. Barker (1956) asks, "If Lemon dropped the flashlight, as he claimed, how did they get an apparently longer look at the 'monster'?" Some said the being was lighted from within (probably only the effect of its "shining" eyes), while Nunley stated that it was illuminated by the pulsing red light (ostensibly from the supposed UFO but probably from one of the beacons mentioned earlier). This might also explain the "fiery orange color" of the creature's head (Sanderson 1967), but as an alternative explanation, while the barn owl is typically described as having a white facial disc and underparts, in the case of the female those parts "have some darker buff or tawny color" ("Barn Owl" 2000).

For this reason, as well as the fact that in this species (a medium-sized owl, measuring about 14–20" [Peterson 1980]) the male is typically the smaller (Blanchan 1925), I suspect the Flatwoods creature was a female. It is also interesting to speculate that it may not have been too late in the year for a female to have been brooding young. That could explain why "she" did not fly away at the first warning of intruders (given barn owls' "excellent low-light vision and exceptional hearing ability" ["Barn Owl" 2000]); instead, probably hoping not to be noticed, she stood her ground until invaders confronted her with a flashlight, a threatening act that provoked her hissing, attack-like swoop toward them.

Significantly, the locale where the Flatwoods Monster made its appearance—near a large oak tree on a partially wooded hilltop overlooking a farm on the outskirts of town—tallies with the habitat of the barn owl. Indeed, it is "the

best known of farmland owls" (Cloudsley-Thompson 1983). It builds no nest, but takes as its "favorite home" a "hollow tree" (Blanchan 1925). It "does not mind the neighborhood of man" (Jordan 1952), in fact seeking out mice and rats from its residence in "woodlands, groves, farms, barns, towns, cliffs" (Peterson 1980).

Considering all of the characteristics of the described monster, and making small allowances for misperceptions and other distorting factors, we may conclude (adapting an old adage) that if it looked like a barn owl, acted like a barn owl, and hissed, then it was most likely a barn owl.

How "Monsters" Appear

It may be wondered, however, why the creature was not immediately recognized for what it was. The answer is that, first, the witnesses were led to *expect* an alien being by their sighting of a UFO that appeared to land and by the pulsating red light and strange smell that seemed to confirm the landing. Therefore, when they then encountered a strange creature, acting aggressively, their fears seemed to be confirmed and they panicked.

Moreover, the group had probably never seen a barn owl up close (after all, such birds are nocturnal) and almost certainly not under the adverse conditions that prevailed. The brief glimpse, at night, of a being that suddenly swept at them—coupled with its strange "ghastly" appearance and shrill frightening cry—would have been disconcerting to virtually anyone at any time. But under the circumstances, involving an inexperienced group primed with expectations of extraterrestrials, the situation was a recipe for terror.

And so a spooked barn owl in turn spooked the interlopers, and a monster was born. A "windy" newspaperman and pro-paranormal writers hyped the incident, favoring sensational explanations for more prosaic ones. Such is often the case with paranormal claims.

According to Barker, "Not all agreed that the 'monster' had arms," but "Mrs. May described it with terrible claws."

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The Face Behind the 'Face' on Mars

A Skeptical Look at Richard C. Hoagland

From the "Face" on Mars, to the Pioneer plaque, to the possibility of a liquid ocean on Europa, Richard Hoagland boasts of his scientific prescience. But beneath that facade lies a yawning credibility gap.

GARY P. POSNER

In July 1976, as NASA's Viking 1 spacecraft orbited Mars, a couple of its photographs included coverage of a geographic region designated as Cydonia. Strewn with rocky mesas and devoid of dried river channels, this landscape did not strike NASA as an inviting target for their next lander mission to search for traces of possible ancient life.

But when the photos were released to the public, one of the many mesas seen in Plate #035A72 captured the national spotlight because of its striking resemblance to a humanoid face, complete with headdress (figure 1). Speculation then arose in some quarters that perhaps this mile-long structure was not a natural surface feature at all, but rather an artificial monument. But was it constructed by

a once-thriving Martian civilization? Was it erected by beings from elsewhere in the galaxy, during a brief junket through our solar system, perhaps as a "calling card" for when we became a space-faring species? Or might earthlings—from our own future—be responsible?

The person most intimately associated with the "Face on Mars" is Richard C. Hoagland, a gifted speaker and author of the 1987 book *The Monuments of Mars: A City on the Edge of Forever*. Yes, a "City." For within 035A72, Hoagland and his associates believe they have also discovered evidence of, among other relics, a "fortress," an artificial "cliff," a "five-sided pyramid . . . apparently damaged by explosive penetration [that] seems to possess . . . the *proportions of humanoids* [with] its 'head' pointing directly toward the [more-famous] 'Face'" (italics in original), and a collection of structures dubbed the "City Square." According to Hoagland, the city may date back approximately 500,000 years to a time when, if one had stood in the middle of the City Square, "the Summer Solstice sun would have arisen directly over the 'Face'."

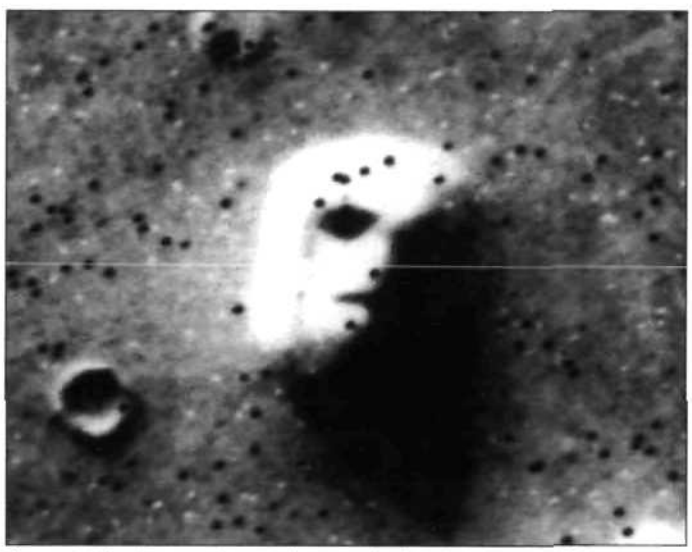

Figure 1. The "Face on Mars," photographed in 1976 by the Viking 1 spacecraft.

But by 1990, despite the popularity of Hoagland's book, there still appeared to be no NASA program in the works to aggressively explore Cydonia. Yet, to hear Hoagland tell it, all was about to change dramatically, thanks to his efforts.

At that time, Hoagland was serving as science advisor to the *For The People* radio program, which was based in Cedar Key, Florida, and broadcast daily across the United States on the Sun Radio Network (and worldwide via shortwave). Hosted by Chuck Harder, this "overheated radio talk show" (as described by Alex Heard in his June/July 1991 *Air & Space Smithsonian* article) was devoted partly to useful consumer-oriented advice, and partly to conspiracy and fringe-science themes such as UFOs, suppressed cancer cures, and perpetual energy machines. Given the nature of much of the subject matter, the program's Florida roots, and my position as founder of the Tampa Bay Skeptics (and editor of its newsletter, *TBS Report*), I began taping some of the broadcasts, saving and cataloging the most preposterous comments (winding up with nearly five hours of priceless "Greatest Hits" snippets, many involving Hoagland), and writing about them in *TBS Report*.

Hoagland Speaks at NASA

My initial inquiries into some of Hoagland's pronouncements on *For The People* had concerned the first of his two 1990 presentations (March 20) at the NASA Lewis Research Center in Cleveland, Ohio. In a May 13, 1990, Letter to the Editor of *TBS Report*, Chuck Harder had claimed that

> NASA invited [Hoagland] after their own internal investigation of the [Cydonia] photos gave his mission sufficient credibility to ask him . . . to present the program to 4,000 NASA scientists and employees. Hardly a laughing matter. . . . Thus on the "NASA ALERT Presentation—Was There Life on Mars?" I suggest you contact Joyce E. Bergstrom at NASA. I have photocopied her business card (attached).

At Harder's suggestion, I wrote to Bergstrom on May 19. And on June 5 she telephoned me, only too happy to clarify the circumstances surrounding Hoagland's presentation at NASA/Lewis. She explained that the Lewis center "brings in speakers on a variety of topics of interest as an employee perk. They can legally charge their time for one hour away from their job to go to the auditorium to listen to a colloquium." Regarding the "ALERT" designation attached to the title of his presentation, Bergstrom told me that ALERT is just a "catchy acronym" for Alert Lewis Employees on Relevant Topics, and connotes no special importance to the subject matter. And as for this being "no laughing matter," Bergstrom chuckled at the suggestion that Hoagland's invitation had resulted from "an internal investigation by NASA giving sufficient credibility" to his claims, saying, "No, sir. Not at all. Hoagland was invited to the center by our director as a guest for the day based on an employee's recommendation that he would have an interesting subject." She added that no NASA scientist had ever expressed to her a belief in Hoagland's theories about Mars.

On the July 13 *For The People* program, Hoagland discussed his March 20 presentation at NASA/Lewis. Among his statements was one to the effect that NASA's Dr. John Klineberg, as he introduced Hoagland, credited him with playing a role in President Bush's decision that we reinvigorate our exploration of Mars. But Klineberg informed me (in an October 24, 1990, letter) that his remark was "of insufficient gravity to be quotable" since he had "no insight" into any such connection. Lewis's Director of Internal Affairs, Americo F. Forestieri, had written to me on October 4 saying, "I understand [Klineberg's] remark was made with tongue in cheek."

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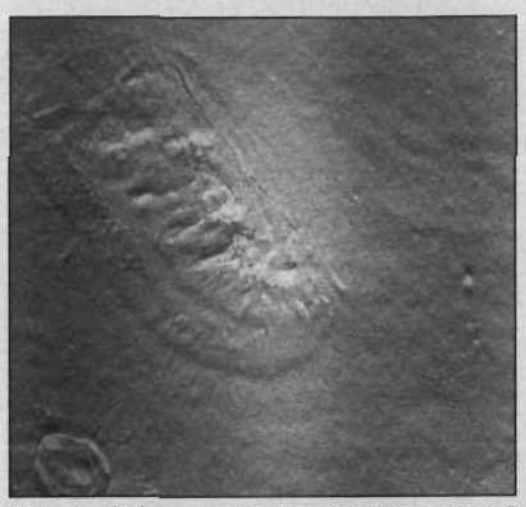


Figure 2. A higher-resolution view of the "Face on Mars," photographed by the Mars Global Surveyor in 1998.

A "Smiley Face" on Mars (Galle Crater), as seen by the Mars Global Surveyor spacecraft in 1999.

Drawing by Joe Nickell

Richard Hoagland

During the same July 13, 1990, *FTP* broadcast, Hoagland said that his second NASA/Lewis invitation was to address an upcoming September 11 "major national NASA education conference." On the September 17 *FTP* program, he described what had been "a packed auditorium full of teachers and scientists and engineers and educators." He added that NASA's *Dr. Eddie Anderson had "made a very big point of congratu*lating me, of expressing his interest in our work." But, according to Forestieri,

> This conference . . . [of] the NASA/Oklahoma State University Aerospace Education Services Project . . . was attended by about 50 people. . . . To say this was a "major NASA education conference" and that "the auditorium was full" would be stretching it a bit. . . . According to Dr. L. Bondurant, the organizer of the conference, Mr. Hoagland was invited to speak at this conference "to stretch the peoples' minds [and] give them something to think about." Dr. Eddie Anderson's comment to me, when I asked him your question, was that he was just being a genial host in expressing interest in Mr. Hoagland's findings. He made no comment as to their veracity. . . . I took the liberty of contacting some of the people that worked on the Viking program [and] also some working on the proposed new mission to Mars, and they are not aware of any interest in Mr. Hoagland's claims.

Hoagland also announced on September 17 that NASA was preparing a three-part "miniseries" on his presentations, entitled *Hoagland's Mars*, to air on PBS. He added, "I and Carl now both have our own miniseries," as if to compare his to Sagan's award-winning series *Cosmos*. In a November 5, 1990, telephone conversation, I learned from Craig De Sagnick, a contract video production manager to NASA/Lewis, that the original two-show project had been reduced to a single, half-hour program about Hoagland's March 20 presentation, which would carry a disclaimer making clear that Hoagland's theories were his own and not NASA's (the second half-hour production was deemed of insufficient technical quality to warrant a TV show being made). He told me that NASA produced between thirteen and twenty-six new shows per year on a variety of space-related topics, which any individual PBS station could elect to broadcast if it so wished.

Dubious Claims for Due Credit

On July 6, 1990, Hoagland accused *Omni* magazine of "the height of editorial irresponsibility." What prompted him to vent his outrage to the international *FTP* audience? In its July article about a hypothetical "Mars Rover" mission to Cydonia, according to Hoagland the magazine "ascribed to Carl Sagan [my] work on . . . the pyramids and all the other things that are there." But the article referred to the "face" as merely a "mesa . . . named for its resemblance to human features," not as an artificial structure. And there were no references to the rest of Hoagland's "work," although Sagan did refer, metaphorically, to the region's mile-high mountains as "beckoning pyramids."

Speaking of Sagan, the Pioneer 10 plaque (figure 3) and its elegant message have always to me epitomized his poetic genius. But Hoagland told the *FTP* audience on July 13, 1990, that "Carl for many years has been taking public credit for the Pioneer plaque which, of course, Eric Burgess and I

conceived." On a broadcast later that year (November 16) he added that "Carl . . . was involved with Eric Burgess and me in the design of [the] message." And in the publisher's foreword to *The Monuments of Mars* we find this passage:

> Among Hoagland's most valued contributions to history and science is the conception, along with Eric Burgess, of Mankind's First Interstellar Message in 1971, an engraved plaque carried beyond the solar system by the first man-made object to escape from the sun's influence, Pioneer 10. Hoagland and Burgess took the idea to Carl Sagan, who successfully executed it aboard the spacecraft and acknowledged their creation in the prestigious journal *Science*.

When I inquired of Carl Sagan as to the precise nature of Hoagland's role in the "creation" and "design" of the Pioneer 10 plaque, Sagan's reply of September 6, 1990, made clear that "Eric Burgess and Richard Hoagland did no more than suggest to me that a message be put aboard Pioneer 10 and 11. Frank Drake and I, with an assist from Linda Sagan [Carl's wife at the time, who prepared the artwork], did the design, and I was responsible for getting it through the NASA and White House approval process. . . . [Hoagland] did not contribute one bit of data towards the message design."

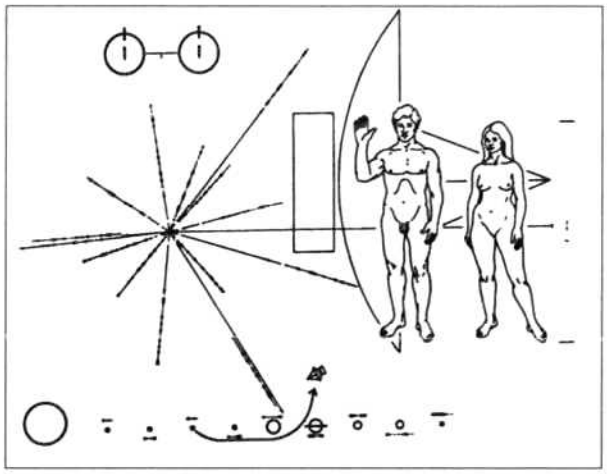


Figure 3. The plaque that flies in perpetuity aboard Pioneer 10 and 11, as designed by Carl Sagan and Frank Drake.

Frank Drake confirmed Sagan's account (September 27): "Neither Eric Burgess nor Richard Hoagland contributed any ideas or even suggestions as to what should be on the Pioneer 10, and no suggestions as to any message content. They did point out that Pioneer 10 was going to leave the solar system and it would be nice to put some form of message on it. That was as far as their involvement went. I am sure that Eric Burgess would be glad to confirm this. . . . The idea that there should be an engraved plaque, and the type of information which should be engraved, was developed mutually by Carl and me. . . . I remember very clearly that we started with completely open minds as to what the message should be, and without any prior suggestions as to possible message content."

In a note of acknowledgements at the conclusion of Sagan and Drake's February 25, 1972, *Science* article entitled "A Message From Earth," Burgess and Hoagland are credited with the "initial suggestion to include some message aboard Pioneer 10." But as Hoagland acknowledges on page 98 of his own book, it was actually *Burgess* who first said to *Hoagland*, "It ought to carry a message." (Then, on the next line, Hoagland claims that *he had already thought of* the idea: "*That* was the unvoiced thought, which had been nagging at me ever since I'd gazed in through [the craft's] thick quartz windows" [italics in original].)

At Drake's suggestion, and thanks to his tip in helping me locate Eric Burgess (who had been a writer for the *Christian Science Monitor* at the time of the Pioneer 10 project), I telephoned Burgess, who told me the following (and subsequently mailed me a copy of the epilog to his 1982 book, *By Jupiter: Odysseys to a Giant*, in which he recounts a virtually identical sequence of events):

> I came up with the idea [that the craft carry a message from Earth]. And I mentioned it [at lunch that afternoon] to Hoagland [then a freelance writer] and Don Bane [*Los Angeles Herald Examiner*]. . . . And I said that the right man to get this onboard would be Carl Sagan. So I went around to JPL [NASA's Jet Propulsion Laboratory]—Hoagland was in tow with me—and found Sagan. . . . And I said, "Hey, Carl, I've got an idea for you." All Hoagland did was support me and say it's a good idea.

Hoagland is also widely believed to have been the first to deduce the tantalizing notion of an ocean, possibly harboring life, flowing beneath the icy crust of Europa, one of the moons of Jupiter. Even Arthur C. Clarke, in an acknowledgment at the end of his book *2010: Odyssey Two* (his sequel to *2001: A Space Odyssey*), credits Hoagland:

> The fascinating idea that there might be life on Europa, beneath ice-covered oceans kept liquid by the same Jovian tidal forces that heat Io [Jupiter's volcanic moon], was first proposed by Richard C. Hoagland in the magazine *Star & Sky* ("The Europa Enigma," January, 1980). This quite brilliant concept has been taken seriously by a number of astronomers (notably NASA's Institute of Space Studies, Dr. Robert Jastrow), and may provide one of the best motives for the projected GALILEO Mission.

But late into my preparation of this article (in fact, some days after I first posted its precursor on my Web site), I came across the "Europa" Web site of Ralph Greenberg, a professor of mathematics at the University of Washington in Seattle, who has been attempting for several years, without success, to have Hoagland clarify the record on Europa. One night in July 1996, Greenberg was listening to Art Bell's wildly popular late-night *Coast to Coast A.M.* radio program (now hosted by Mike Siegel following Bell's retirement). Bell's guest was Richard Hoagland, who proceeded to accuse NASA of preparing to steal the credit for his own original ideas about Europa. Hoagland singled out a particular NASA scientist, Cornell University's Steven Squyres, as one who had already begun the process earlier that month during a scientific meeting in England. Greenberg knew nothing of these matters, but was disturbed that Hoagland would make such an accusation, in a national venue, on the basis of a newspaper account of that meeting. (It turned out that Squyres had made no claim to having been the idea's originator.) As Greenberg relates on his Web site, "During Hoagland's [later] frequent guest appearances, Art Bell would often mention some recent news item

about Europa and either he or Hoagland would bring up the subject of Hoagland's 1980 article, always giving the impression that it was he who first proposed [the idea]. Art Bell would then usually add some sarcastic comments about the scientific community not giving Hoagland his due credit."

Then, in early 1997, Greenberg happened to see an article in *Science News* mentioning that the idea of a liquid-water ocean under the ice of Europa had first been proposed in 1971 by John S. Lewis. Taken somewhat aback, Greenberg decided to do a little more digging, and found that a series of additional scientists had also chimed in with concurring articles throughout the 1970s. And he found at least three scientists who, prior to 1980, had speculated publicly about the possibility that life might have evolved in such an ocean (Robert Shapiro, Gerald Feinberg, and Benton Clark), as well as science-fiction writer Duncan Lunan.

In his 1980 article, Hoagland clearly does acknowledge (on page 28) that "it was [space scientists] Cassen, Peale and Reynolds who arrived at the estimate [of] Jupiter's tidal influence upon [Europa]. . . . Those energies should produce . . . internal heating." Hoagland shortly thereafter offers the following, which one might incorrectly assume to be an original flash of extrapolated insight: "Unless . . . There, in the tidal calculations, was the provocative potential that *beneath* a thin, outer shell of ice, the bulk of Europa's planetary ocean *was still ocean*" (italics in original). He doesn't mention that this was the central point of the scientists' paper, and that it was entitled "Is There Liquid Water on Europa?" (*Geophysical Research Letters*, Vol. 6, September 1979).

Figure 4. Stamp sheet issued by Sierra Leone featuring the "Face on Mars."

When Greenberg sent to Arthur C. Clarke (and others) six pages summarizing the history/chronology of this evolving view of Europa, Clarke replied that "I have [since] become aware of the fact that many others had thought of it first, as you point out." But Clarke also expressed his enduring gratitude to Hoagland for his "excellent 1980 article [which was] my first introduction to the idea."

Indeed, the *Monuments of Mars* publisher's foreword makes Hoagland sound like somewhat of a science prodigy:

> Richard C. Hoagland is, by career, a science writer as well as a consultant in the fields of astronomy, planetarium curating, and space-program education. . . . In 1965, at the age of nineteen, [Hoagland] became Curator (possibly the youngest in the country) of the Springfield, Massachusetts, Museum of Science. . . . In 1966 Hoagland served as NBC [Television] consultant for the historic soft landing of a U.S. spacecraft on the moon—*Surveyor 1*. Later he appeared on "The Tonight Show" explaining the significance of the landing to Johnny Carson. . . . At Christmas [of 1968, for the Apollo 8 lunar-orbital mission] he was asked to become a consultant to CBS News . . . and served as [a science] advisor to Walter Cronkite.

But I learned from David Morrison, Chief of the Space Science Division at NASA's Ames Research Center, that Hoagland was largely "self-educated" in science. In an August 31, 1990, letter, Morrison told me that he knew of "no one in the scientific community, or who is associated with the NASA Mars Science Working Group, or who is working on Mars mission plans at such NASA centers as Ames, Johnson, or JPL, who ascribes even the smallest credibility to Hoagland or his weird ideas about Mars." So much for the "groundswell of official NASA interest" that Hoagland boasted of during his July 13 *For The People* appearance.

The $10,000 Stamp Set

Hoagland also endeavored to help create a groundswell of public interest in a set of souvenir stamp sheets being sold through mail order, by promoter (and occasional stamp dealer) Alan Shawn Feinstein, for more than $100, roughly two to three times its face value. The thirty-seven-stamp series from Sierra Leone was devoted to "saluting the coming exploration of Mars" by the ill-fated Mars Observer craft, which was to have returned high-definition photographs of the Red Planet, including the Cydonia region. The stamps depict likenesses varying from Galileo and Percival Lowell to space probes and Martian surface features, including the "Face" (figure 4).

According to Michael Laurence's "Editor's Choice" column in the April 30, 1990, issue of the authoritative *Linn's Stamp News*, Feinstein's sales pitch included the following heads-up: "If that Face should turn out to be created by intelligent life, this stamp set could become one of the most valuable collector items in the world." Laurence noted that Feinstein's latest venture combined "his interest in extraterrestrial life with his penchant for selling stamps at high markups to non-collectors." (A recent Web search revealed that Feinstein has since created the Feinstein Foundation, whose Web site describes him as "a nationally known philanthropist and humanitarian [who] founded the World Hunger Program at Brown University . . . the World Hunger Brigade . . . and the Feinstein International Famine Center at Tufts University.")

In a follow-up December 10, 1990, column, Laurence reported that the stamp set from Sierra Leone, "an obscure and corrupt-ridden African nation," had recently been "blacklisted by a Swiss-based combine of international stamp organizations

[due to Sierra Leone's violations of] the philatelic code of ethics of the Universal Postal Union." He also noted that Richard Hoagland had been engaged by Feinstein for some months "as an expert witness to support the assertion that the Sierra Leone set will soon be worth five figures." Laurence then quoted from the October issue of Feinstein's *Wealthmaker Quarterly Report*, in which Hoagland asserted that the stamp set

> should soon be worth $10,000 or more. That's what I believe. I know basically nothing about stamps. But I know a great deal about the specific subject of the Sierra Leone stamp set. On the basis of my research, that's what I think that set is going to be worth. The value of a commemorative is dependent on the intrinsic value of the event it is commemorating. . . . [The "Face"] is a constructed monument made by intelligent life. When the world finds that out, it will be nothing less than the greatest discovery in the world. It will have an unprecedented effect on people everywhere, and on the value of the Sierra Leone set.

Michael Laurence's learned response followed: "Those who believe such breathless nonsense probably deserve financial disappointment. And that's the likely reward in store for anyone who expects speculative profit from this overpriced and highly manipulated stamp set." Indeed, Laurence informs me that the current philatelic retail value of the set remains less than $100. But don't lose hope. Several Web sites contain sale listings for the set (in mint condition) with owners requesting anywhere from $99 (rare), to several hundred dollars (more plentiful), to Hoagland's $10,000 figure. (Most appear to be asking for about $5,000.)

Free-Energy Machines

During the course of my 1990 monitoring of *For The People* broadcasts, Hoagland (with Chuck Harder) was also engaged in selling a book, published by *FTP* and edited by Hoagland, which promoted a perpetual-energy device dubbed the "N Machine." According to Hoagland on September 7, the machine opens "a gate to the 4th dimension [as it] reaches into space-time and converts direct electrical energy from the basic properties of the space-time continuum." He "clarified" matters on November 16:

> It [only] looks like it's perpetual motion, but it's not. Because what I think is happening, based on our Cydonia work, is that the rotation of the magnets opens a gate to the 4th dimension, and the energy simply flows downhill from the 4th to the 3rd, and is manifest in 3-space as electrical energy. [The magnets] are hexagonally shaped in terms of their crystalline form, and it's the hexagonal pattern, which is really the double tetrahedral pattern, which is the heart of our Cydonia equations. . . . [And] there's a more general field effect [going on], a more general energy transfer, and that's what's doing the slowing down of time.

Further, Hoagland's studies in "tetrahedral geometry" suggest to him a connection not only between the "N Machine" and the Cydonia structures, but also with our own planet's "crop circles": "The measurements of the units by which this object on Earth [crop circle] was laid out are part and parcel of the exact same units that the objects on Mars are laid out—Alexander Thom's famous megalithic yard, 2.72 British feet" (July 27).

Referring to Dr. Duncan G. Cumming's article about the "N Machine" in the Fall 1990 issue of SKEPTICAL INQUIRER, Hoagland claimed on November 9 that "If you carefully read the article, they . . . take potshots but they never do the experiments." In reality, Dr. Cumming *does* discuss his experiments in the article. On November 5 I had written to Chuck Harder: "In the interest of full disclosure, I would request that you please send a review copy [of the book] to Dr. Cumming, and arrange for an on-air interview with him. . . . If necessary, I would be willing to pay for the book and shipping costs." Harder replied on November 27, informing me that he was "sending [my letter] on to Richard Hoagland who will respond." When Hoagland failed to do so, I sent Harder a reminder on January 12, 1991, to which he responded, "If you or Duncan Cumming want a book from us, you can order one from the catalog and pay for it."

Richard Hoagland had been engaged by Feinstein for some months "as an expert witness to support the assertion that the Sierra Leone [stamp] set will soon be worth five figures."

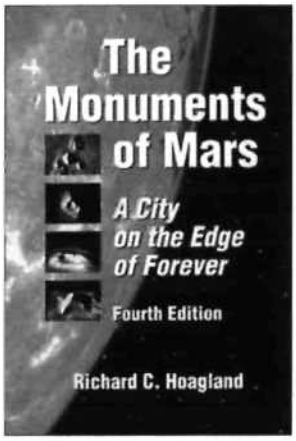
According to *FTP*, a variation of the "N Machine" was already in full operation. Thus, on September 21, 1990, I wrote to B. Premanand, founder of the Indian Committee for the Scientific Investigation of Claims of the Paranormal:

> I would like to know if the Indian government has in operation a power generator that produces more energy than it consumes (i.e., a perpetual energy machine). This claim is being made repeatedly on the "For The People" radio program (heard on 7.520 MHz internationally from 2400 to 0200 hours UTC). The machine is supposedly a magnetized gyroscope, located on the west coast of India in a city that sounded like "Caroa," which is supposedly south of an old Portuguese colony that sounded like "Doa." If I heard correctly, a German company that sounded like "Gadori" may have actually built it.

Although Premanand's letter of reply never made its way back to me, mine did reach him. I was quite surprised, and delighted, to discover that, as a result of my letter, he had devoted nine pages to this subject in the April 1995 issue of his group's *Indian Skeptic* newsletter (in which a copy of my letter was reproduced). Premanand wrote about his efforts to track down Dr. Paramahamsa Tewari, who, according to a 1987 Indian newspaper account, had demonstrated his machine in Hannover, Germany, before an audience that included 1,500 scientists from around the world. His Space Power Generator (SPG), one of about twenty-five similar machines presented at that conference, supposedly extracts power from the vacuum

of space. Though the prototype was said to have been built at the Tarapur Atomic Plant in India, Premanand could find no one in the Department of Science & Technology of the Indian government who knew of Dr. Tewari or his SPG.

In a June 21, 1994, letter (reproduced in *Indian Skeptic*), N.A. Janardan Rao, Vice President for R&D and Technology Development of Kirloskar Electric Company Ltd. in Bangalore, wrote (to the author of a 1994 Indian newspaper article), "Many years ago I had corresponded with Dr. Thiwari [*sic*] and he had sent me a small book written by him on this subject. I then proceeded to actually design and fabricate a free energy machine. We incurred an expense of more than one hundred thousand rupees and 8 man months in fabricating this unique device. Subsequent testing showed that *there was no free energy as claimed*; an infinitesimal electrical output was detected which could be attributed entirely to Faraday's law" (emphasis added).



Rao's letter went on to provide Tewari's whereabouts: He turned out to be director of the Kaiga Project for the Indian government's Nuclear Power Corporation in Karwar, Karnataka. Premanand then wrote to Tewari, whose August 25, 1994, letter of response reported, "The experiments on various models of Space Power Generators are continuing with a hope to come out with the most commercially viable system. . . . By end September [1994] one of the machines [should] be in operating condition."

Six more years have since transpired, with still no confirmation of the miracle machine that Hoagland and Harder had touted as operational (and sold books about) back in 1990. No matter. Largely with Hoagland's help, *For The People*'s ratings (according to Harder) soared that year (e.g., up by more than 1,000% in Gainesville, Florida). Given the program's (and its companion magazine's) pro-paranormal, conspiratorial bent, *such is certainly understandable.*

The Scrupulously Skeptical Hoagland

But like a Hollywood marriage, the Hoagland/Harder relationship didn't last, and by 1992 Hoagland was no longer a fixture, or even a footnote, on *For The People.* The reason (improbable as it sounds): Apparently Hoagland had seen fit to chastise Harder for promoting a wild claim without first having nailed down the facts! Harder had been hyping a story about an "intelligently guided" asteroid that was slowly decelerating, and making course corrections, as it worked its way toward the inner solar system. An authentic-looking *New York Times* article, dated October 6, 1977, quoted a number of scientists as confirming the artificial nature of the "asteroid," and projecting that it would enter Earth's orbit, between Earth and Moon, on or about October 25—1977! The fact that no such event had occurred was not enough to quash Harder's fascination. Writing in the first 1992 issue of *UFO* (Vol. 7, No. 1), the magazine's research director, Don Ecker, reported that Hoagland had "embarrassed host Chuck Harder on the air, thereby severing his weekly spot on Harder's show. . . . On one of Hoagland's weekly spots, he attacked Harder on the air, lambasting him for giving out the story without, according to Hoagland, checking out the facts. . . . It turned out that when the *New York Times* Index was checked, along with microfiche copies from that date and several days after, no such article could be found."

On March 21, 1996, the scrupulously skeptical Hoagland presented his best evidence for extraterrestrial civilizations during a news conference at the National Press Club in Washington, D.C. According to Richard Leiby's article in the following day's *Washington Post*,

> Reporters from about fifty worldwide media organizations came to see . . . "suppressed evidence" . . . "apparent lunar ruins" . . . [and other] proof of aliens. They scrutinized grainy blowups of old NASA photos and slides of impossibly fuzzy objects—including a blob that [Hoagland's] assembled research team called "the castle." To be more precise: "an extraordinary, highly geometric, glittering glass object hanging more than nine miles above the surface of the moon," in the words of Richard Hoagland, the New Jersey author and noted pseudo-scientist who [organized] the conference.
>
> Hoagland, 50, is, basically, a kook. He's famous for popularizing the sighting of an alleged "human face" in the terrain of Mars, and he more recently claimed that the Bosnian peace talks were held in Dayton, Ohio, so the world leaders could view alien bodies housed in an Air Force hangar there.
>
> But . . . the collective media didn't snort with laughter and walk out. Instead, journalists politely asked [questions]. . . . Later, reporters from CNN and the Associated Press, among others, called Apollo 12 astronaut Alan Bean to ask whether he'd ever stood on the moon near a "massive tier of glass-like ruins," as alleged in one Hoagland handout. . . .
>
> Hoagland said a source at [NASA's] Goddard Space Flight Center . . . leaked him a pristine negative from the Apollo 10 mission showing a 1 1/2-mile-high "shard" protruding from the lunar surface. . . . "I see absolutely nothing like the so-called shard," said Paul Lowman, a Goddard geologist and expert in orbital photography, after examining the frame cited at the news conference. "He's seeing some sort of a [photo] processing defect."

In 1998, a bit more than a decade after publication of *The Monuments of Mars,* the Mars Global Surveyor orbital craft returned an image of the "Face" (Photo #22003) with more than 10× greater resolution than Viking had obtained two decades earlier. Contrary to Hoagland's theories, the new 20/20 view revealed the "Face" to be nothing more than what NASA scientists knew it to be all along, one of many similar natural features sculpted into the dusty, rocky surface by the red planet's fierce, swirling winds (figure 2). And a 1999 view of the "City Square" (Release No. MOC2-142) revealed it, also, to consist of nothing more than buttes and hills.

With benefit of hindsight, has Hoagland now abandoned his "City" on Mars? A visit to his "Enterprise Mission" Web site (www.enterprisemission.com) reveals quite the opposite.

Gary Posner's Web version of this article (available at http://members.aol.com/garypos2/Hoagland.html) contains numerous relevant links. □

The New Paranatural Paradigm

Claims of Communicating with the Dead

The paranatural paradigm deals with other dimensions of reality beyond our own and apart from the supernatural. Philosopher Paul Kurtz examines the paradigm in the context of life after death.

PAUL KURTZ

A new paranatural paradigm seems to be emerging in postmodern culture. There is great public fascination with a paranatural/paranormal conception of the universe, fed in large part by the mass media and encouraged by a number of "fringe sciences," which claim to support this outlook. The cultural backdrop for this is the development of postmodernism in the academy—the denial that science provides us with objective truth, the belief that it is only one mythic narrative among others, and that a New Age paradigm is emerging that displaces or drastically modifies scientific naturalism.

What do I mean by the term "paranatural"? Science presupposes naturalism; that is, it seeks to develop causal

explanations of natural phenomena, and it tests its hypotheses and theories by reference to the principles of logic, empirical observation, experimental prediction, and confirmation.

This is in contrast with supernatural explanations, which claim to deal with an order of existence beyond the visible or observable universe, and attributes events to occult causes. Supernaturalism postulates divine powers intervening miraculously in natural causal sequences. Thus it is alleged that the natural and material universe needs to be supplemented by a supernatural reality, which transcends human understanding and can only be approached by mysticism and faith. The domain of faith, it is said, supplements the domain of reason.

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Haley Joel Osment starred in *The Sixth Sense* as Cole Sear.

There are, however, two classes of events that stand between the natural and supernatural realms and enable us in some sense to deal with the occult. These refer to (1) paranormal and (2) paranatural phenomena. The term "paranormal" was used in the past century by parapsychologists (such as J.B. Rhine and Samuel Soal) to refer to a class of anomalous events that its proponents claimed were inexplicable in terms of normal materialistic sciences. "Para" meant "besides, alongside of, or beyond" naturalistic psychology. Nonetheless, these parapsychologists maintain that it was possible to describe and perhaps interpret these events experimentally, and they did so by referring to a range of psi phenomena, which referred to ESP, telepathy, clairvoyance, precognition, and psychokinesis.

There is another range of events, which I have labeled as "paranatural," that deal with still other dimensions of reality: classical mystical or supernatural claims that allegedly intrude into our universe from without. I am here referring primarily to a theistic order of reality and to phenomena including discarnate souls, intelligent design, and "creation science." Visitations from extraterrestrials beyond this world may be considered to be both paranormal and paranatural. Included under this rubric of "paranatural" are some classical religious phenomena, such as weeping statues, stigmata, exorcism and possession, faith healing, the Shroud of Turin, past-life regressions used as evidence for reincarnation, historical revelations by prophets who carry messages from On High, and other so-called religious miracles. All of these have an empirical component and are not completely transcendental, and hence they are capable of some experimental testing and historical reconstruction of their claims. Although these anomalous events are beyond nature, in one sense, proponents of them seek to offer some kind of empirical evidence to support their hypotheses that there are nonnatural, nonmaterial, or spiritual processes at work in the universe.

I disagree with the claims of the defenders of the *para*: I do not think that either the paranormal or paranatural exist outside of nature or that they constitute dimensions of reality that undermine naturalism. *Para* is a substitute for our ignorance at any one time in history (as is the term "miracle," which is interjected when we do not understand the causes of phenomena). Indeed, as we expand the frontiers of knowledge, phenomena considered *para* can, I submit, be given naturalistic or normal explanations, and this range of phenomena can either be interpreted by the existing body of explanatory scientific principles or by the introduction of new ones.

The Paranatural Paradigm and Life After Death

I wish to illustrate this by dealing with the intriguing question: What is the evidence for life after death? Can we communicate with the dead? That is, Are we able to be in touch with people who have died? Do they have some form of existence, perhaps as "discarnate spirits" or "disembodied souls"? This is an age-old question that is related to faith in immortality and a very deep hunger for it. Although it has been interpreted as "paranormal," it may more appropriately be considered to be "paranatural" because of its religious significance. Indeed, for the great supernatural religions of the world—Christianity, Judaism, and Islam—belief in an afterlife and the promise of heaven are central.

At present there is intense popular interest in these questions in the United States. It is stimulated by the mass media, at least as measured by the number of popular books, magazine articles, movies, and television and radio programs devoted to the theme. The films *The Sixth Sense* (with Bruce Willis and Haley Osment) and *Frequency* are examples of the prevailing interest, as are the best-selling books by James Van Praagh (*Talking to Heaven*, 1997; *Reaching to Heaven*, 1999), John Edward (*One Last Time*, 1998), Sylvia Browne (*The Other Side and Back*, 1999), and Rosemary Altea (*You Own the Power*, 1999). Dan Rather on CBS, the Fox TV network, *Larry King Live*, and other talk-show hosts have devoted many uncritical programs to these claims. For example, the HBO TV network did a special last year, "Life Afterlife," purporting to present the scientific

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examination of survival. It interviewed dozens of people, all of whom claim to have communicated with the dead, and several parapsychologists, all arguing the case for survival. Included in this special were critical comments by two skeptics—one more than usual! This is supposed to constitute a "balanced" documentary, and it is typical of the state of American media when dealing with paranatural or paranormal claims. There are all too few objective programs examining such questions; most favor a spiritual-paranormal interpretation.

As a result of a massive media onslaught, polls in the last decade place the United States as number one in belief in life after death in the democratic world, and higher than virtually all European countries. Two cross-national surveys conducted for the International Social Survey Program in 1991 and 1993[1] indicate that the United States ranked highest, along with Ireland and the Philippines, for those who believe in heaven (63.17% of the population), highest for those who believe in hell (49.6%), and highest for those who believe in life after death (55%). The US was lowest of twenty-one nations on knowledge of human evolution (44.2%), lower than Poland and Russia. Recent polls have shown the level of credulity growing in the past decade. In 1996 a poll conducted by Goldhaber Associates (at the State University of New York at Buffalo) indicated that 90 percent of Americans were either "religious" or "somewhat religious."[2] A recent poll conducted for *Newsweek* magazine by the Princeton Survey Research Associates, based on a sample of 752 adults interviewed indicated that 84 percent of Americans said that God performed miracles and 77 percent said saints or God can cure people otherwise medically incurable.[3] Paradoxically, the US is allegedly the most advanced scientific-technological society in the world.

A History of Life After Death Claims

What do scientists have to say about life after death? As the readers of SKEPTICAL INQUIRER know, science has been investigating our ability to communicate with the dead for at least 150 years and it has attempted to discover empirical evidence in support of the claim. It began to do so with the emergence of spiritualism in the nineteenth century; more specifically, with the Fox sisters (Margaret and Kate), two young girls in Hydesville, New York (outside of Rochester), who in 1848 first claimed that they could receive messages from "the spirit world beyond." In their presence, there were strange rappings; people would receive answers to their questions spelled out by the number of taps (Kurtz 1985). The basic premise was that human personality survived death and could communicate with specially endowed mediums. In the late nineteenth century and early twentieth century spiritualism swept the United States, England, and Europe. Thousands of mediums soon appeared, all seemingly capable of communicating with the dead. The most popular method of investigation was to try to communicate in a specially darkened séance room, wherein the discarnate entity would make its presence known by physical or verbal manifestations: table tipping, levitation of objects, ectoplasmic emissions, teleportation, materializations, automatic writings, etc.

A committee of medical doctors at the University of Buffalo tested the Fox sisters in 1851 and attributed their raps to the cracking of their toe knuckles or knee caps against a wooden floor or bedstead. The physicians did a controlled experiment by placing the girls' feet on pillows, and nothing happened. The great physicist Michael Farraday investigated table tipping (1852) and found that it was due to pressure exerted by the fingers of the sitters (whether voluntarily or involuntarily). Sir Walter Crookes investigated the most colorful mediums of the day, D. D. Home (1871) and Florence Cook (1873), and thought that they had special abilities of mediumship—though critics believe that he was duped by both (Hall 1962, 1984).

The Society for Psychical Research was founded in 1882 in Great Britain by Henry Sidgwick, Richard Hodgson, F. W. H. Myers, Edmund Gurney, and others to investigate survival of life after death, among other questions. The American branch of the Society for Psychical Research was founded in 1885 by William James at Harvard. These researchers examined reports of apparitions and ghostly hauntings. It was difficult to corroborate these subjective eyewitness accounts and so these investigations focused on physical manifestations. There were numerous photographs of ghosts—which it was soon discovered could easily be doctored. Many famous mediums such as Eusapia Palladino (in Italy) and Leonora Piper (in Boston) were tested under controlled conditions in an effort to determine whether they possessed extraordinary powers.

Palladino was especially elusive, and the scientific community was split as to whether she was fraudulent. The Feilding Report was an account of sittings done in Naples (1909) by a team of scientists who thought she was genuine. Palladino was also tested in the United States at Harvard by Hugo Muensterberg (1909) and at Columbia University (1910) by a team of scientists; and in both cases the physical levitation of the table behind her and the feeling of being pinched by her spirit control (called John King) was found to be caused by her adroit ability to stretch her leg in contortions and to pinch sitters with her toes, or levitate a small table behind her. This was detected by having a man dressed in black crawl under the table and see her at work. A subsequent Feilding report (1911) also found that she had cheated (Kurtz 1985).

Late in his career the famous magician Houdini (1874–1926) exposed several bogus mediums. By the 1920s the spiritualist movement was thoroughly discredited, because when the controls were tightened, the effect disappeared; skeptics insisted that if a person claims to be in contact with a spiritual entity, there must be some independent physical corroboration by impartial observers (Houdini 1924, 1981).

In the 1930s the survival question in science was laid aside. J.B. Rhine and others focused instead on psi phenomena, again with controversial results, because scientists demanded replicable experiments by neutral observers, which were difficult to come by (Hansel 1980). In any case, whether or not psi existed was independent of the survival question.

Spiritualism Returns

In recent decades interest in the survival question has reappeared. This is rather surprising to skeptical investigators. No doubt this revival of interest is due in part to the growth of

religiosity and spirituality on the broader American cultural scene, but is also due to the sensationalism of the mass media. I can only briefly outline some of the claims that had been made and the kinds of research that has been done. Most of this work is highly questionable, for the standards of rigorous methodological inquiry so essential to science seem to have declined drastically from what occurred in the early part of the last century.

(1) *Channeling to the other side.* Surprisingly, a new class of mediums, now called channelers, have emerged (such as James Van Praagh, John Edward, Sylvia Browne, and Rosemary Altea previously cited) who claim to be able to be put themselves into immediate contact with a dead relative or friend and to convey a message back from them. Thus, what we have are subjective reports based on the word of the channeler that he or she is in touch with the departed spirit. There are two ways that this is done. First, there are "hot" readings, when the channeler may know something by previous research about the person being read. A good case of this is Arthur Ford, who did a reading of Bishop James Pike and claimed he was in contact with his son who had committed suicide. It was discovered after Ford's death that he had done extensive background investigation of Pike's son before the reading. The most common method used, however, is the skillful use of "cold readings" by the channeler. The public here is taken in by flim-flammery, and there is all too little effort to critically examine the claims made.

There has been a massive shift in the methodology used. If in previous decades scientists demanded some corroborative and/or physical manifestation of mediumship, today all rigorous standards of evidence and verification seem to have been abandoned. Psychologist Ray Hyman has shown how a psychic gives a general cold reading: if he throws out messages from the spirit world to an audience someone will usually emerge to whom it fits (Hyman 1977). Thus, he may ask, "Does anyone know a Mary, or a William?" And most likely a person will step forth who does, and then the reading proceeds, on a hit-and-miss basis. The skillful channeler simply has to have one or two lucky hits to mystify the audience.

(2) *Apparitions and other sightings.* Similar considerations apply to the epidemic of eyewitness testimonials that people have been reporting of ghostly apparitions, angels, and other ethereal entities. Such stories are pervasive today, since a tale once uttered may spread rapidly throughout the population; this is facilitated by the mass media and becomes contagious. If someone claims to see ghosts or angels, other people, perhaps millions, may likewise begin to encounter them.

What is so curious is that people who see ghosts usually see them clothed. It is one thing to say that a discarnate soul has survived, but that his or her clothing and other physical objects have survived is both amusing and contrary to the laws of physics.

The most parsimonious explanation that we have for this phenomenon is that it is in the eye of the beholder, satisfying some deep-felt need, a transcendental temptation or will-to-believe. The demand for independent objective verification seems to be ignored. It is puzzling why so many people will accept uncorroborated subjective reports, particularly when we find them unreliable. The death of a loved one can cause untold psychological trauma, and there are powerful motives, psychological and indeed sociological, for believing in their survival. Thus there are naturalistic psychological and sociological explanations that better account for the prevalence of such phenomenological givens, without the need to postulate discarnate beings or our ability to communicate with them.

What is so curious is that people who see ghosts usually see them clothed. It is one thing to say that a discarnate soul has survived, but that his or her clothing and other physical objects have survived is both amusing and contrary to the laws of physics.

Let me briefly outline two other areas of survival research, which at least claim to be more carefully designed.

(3) *Death-bed visions.* Osis and Haraldsson (1974, 1977) sent out questionnaires to doctors and nurses to ask them to describe the verbal accounts of death-bed visions of people in their last moments of dying. The question is whether these persons were able to communicate with departed friends or relatives at the last moment or were merely hallucinating, as skeptics suggest they were. In any case, virtually all of this data is second-hand, and is influenced by cultural expectations that when we die we will meet people on the other side.

(4) *The phenomenology of near-death experience.* This is a very popular area of research today, widely touted as evidence for communication, and based on first-hand testimony. Much research has gone into this intriguing area by Raymond Moody (1975, 1977), Elizabeth Kubler-Ross (1981), Kenneth Ring (1980, 1984, 1998), Michael Sabom (1982), and Melvin Morse (1990), among others. These extended phenomenological reports claim to give us evidence from the other side from people who were dying and resuscitated. There is an out-of-body experience, a vision of a tunnel, a bright light, a recall of one's life, and perhaps a meeting of beings on the other side.

Critics claim that the descriptive collage offered is of the dying process, and that in no case do we have reports of persons who have died (i.e., experienced brain death) and communicated with those on the other side. There are a variety of alternative naturalistic explanations. Skeptics maintain we are most likely dealing with psychological phenomena, where the person facing death has either hallucinations, has reached a state of depersonalization, and/or there are changes in brain chemistry and the nervous system (Blackmore 1993). Some have postulated that the discarnate entities or divine beings encountered on the other side are colored by the socio-cultural context (Kellehear

1996); though proponents maintain that in spite of this there is a common core of similarities. Some have said that falls or accidents where a person thinks he is about to die, but survives, can cause analogous out-of-body experiences and panoramic reviews (Russell Noyes 1972, 1977). Not everyone who is dying reports near-death experiences; many and people who are *not* dying report having them. Sleep paralysis and hypnopompic and hypnagogic dream states are factors in common out-of-body experiences. Ronald Siegel (1981) maintains that similar NDEs can be induced by hallucinogens. Karl Jansen (1996) has presented evidence that they can be stimulated by the dissociative drug ketamine. Various conditions can precipitate an NDE, such as low blood sugar, oxygen deprivation, reduced blood flow, temporal-lobe epilepsy, etc., and can lead to an altered state of consciousness. For skeptics, in no case can we say that the person has died and returns; what we are dealing with is the process or belief that one is dying.

Analytic philosophers have pointed out additional serious conceptual difficulties in the hypothesis that nonphysical beings are communicating with us—there is a sharp mind/body dualism here. Perhaps the real question is not whether there is sufficient evidence for "x," but the meaning of "x"; and whether we can communicate with "disembodied entities" who have a level of consciousness without sensory organs or a brain. Some have claimed that the communication is "telepathic," but the experimental evidence for telepathy is itself questionable.

Conclusion

After a quarter of a century in this field of research, I find that eyewitness testimony is notoriously unreliable, and that unless carefully controlled studies and standards are applied, people can deceive themselves and others into believing that almost anything is true and real—from past-life regression and extraterrestrial abductions to satanic infestations and near-death experiences.

What should be the posture of the scientific investigator about paranatural survival claims? Clearly, we need an open mind, and we should not reject a priori any such claim; if claims are responsibly framed they should be carefully evaluated. After a century and a half of scientific research, what are we to conclude? I submit that there is insufficient reliable or objective evidence that some individuals are able to reach another plane of existence beyond this world and/or communicate with the dead. As far as we know, the death of the body entails the death of psychological functions, consciousness, and/or the personality; and there is no reason to believe that ghosts hover and haunt and/or can communicate with us.

I realize that this flies in the face of what the preponderance of humans wish to believe, but science should deal as best it can with what *is* the case, not with what we would like it to be. Unfortunately, scientific objectivity today has an uphill battle in this area in the face of media hype and the enormous public fascination with paranormal and paranatural claims.

Notes

1. Currently based at the National Opinion Research Center, University of Chicago.

2. "Religious Belief in America: A New Poll," *Free Inquiry* 16(3) (Summer 1996), pp. 34–40.

3. Religion News Service, April 13, 2000.

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Francis Bacon and the True Ends of Skepticism

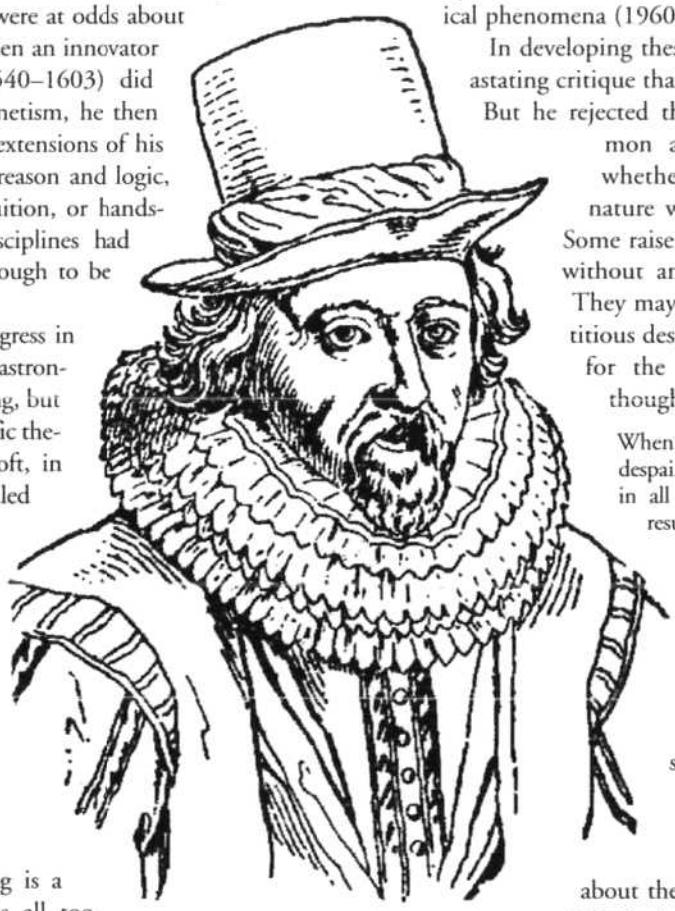
Long ago, Bacon asserted that science must begin with doubts in order to end in certainties, a paradox that stills leads to misunderstandings about Bacon and about science.

BARBARA FRIEDBERG

Detractors of modern science sometimes refer to themselves as skeptics, because they dare to question long-accepted doctrine. But skepticism as a method is not just a resolve to disagree. It is the presumption of error and fallibility on which our science is based. This paradox was first put forth by Francis Bacon in *The New Organon* (1620), building on his previous *Advancement of Learning* (1605). He announced that great things were possible in science, provided that nearly all the old methods and beliefs were cast away. What struck him was the mixture of unproductive dogma and unresolved controversy over basic theory in science despite long centuries of data-collecting and thought. He had ideas about a remedy, yet he believed no

remedy could be complete because the human mind itself had faults and limitations that made it almost incapable of seeing truly. Today, when people claim as a novel discovery that scientists are not godlike beings, that thought may be limited by emotions and culture, and that language is not the same as natural fact, they are merely reiterating Bacon's starting assumptions.

We think of the seventeenth century as a golden age of science. Yet when Bacon considered the matter, inquiry was busy but not very fruitful. Cosmology was up for grabs, the old Scholastic system of four elements offered no definite path to new discoveries, alchemists were at odds about basic laws of chemistry, and when an innovator such as William Gilbert (1540–1603) did achieve knowledge about magnetism, he then went overboard with mystical extensions of his discoveries. Whether stressing reason and logic, symbolic connections and intuition, or hands-on experiment, the active disciplines had yielded few outcomes solid enough to be built upon.



But there *was* practical progress in navigation, engineering, and astronomy. Empiricism was not lacking, but it did not underlie broad scientific theories. These tended to soar aloft, in obedience to what Bacon called "Idols of the mind" because they diverted men from examining divinely created nature. What was needed was "a closer and purer league between . . . the experimental and the rational (such as has never yet been made)" (Bacon 1960, 95).[1]

Bacon's Paradox

Bacon saw that good thinking is a sort of paradox. The mind is all too effective, not only in feeling and imagining, but even in reasoning. Fastening on one idea, it traces implications, follows up parallels, leaps to conclusions, and creates a tight and persuasive system of beliefs. This power can be useful, if properly disciplined, but it tends to shrug aside direct observation of nature. Man, according to Bacon, does not have a privileged intuition into the construction of the cosmos—a direct link to the Creator's intentions—as many then believed. He must let the actions of nature in the uncontrollable future be the arbiters of his theory's soundness. Initial speculations must issue in a well-formulated experiment, and that, in turn, must yield to a sensory judgment of the experiment's result. Though Bacon didn't think of double-blind testing, he saw that these stages must be made as distinct from each other as possible (1960; 2, 50).

Bacon called endemic human limitations "Idols of the Tribe." Even the cleverest minds leap to generalizations, notice striking events more than typical ones, and seek out supportive data more than counterexamples. They fasten on apparent patterns too quickly and don't let go.

"Idols of the Cave" were the individual's limitations and enthusiasms. He may apply favorite ideas or remedies to everything, like a wonder drug.

"Idols of the Marketplace" were the limitations of common language, suitable for everyday life, but not to describe nature accurately. "Substance," "heavy," "moist," and "dense" were all vague terms. New words must refer to measurable physical phenomena (1960, 41–60).

In developing these ideas, Bacon outlined a devastating critique that might well doom any science. But he rejected the immobile skepticism, common at that time, which doubted whether any human theory about nature would ever be a clear advance. Some raise doubts, he said, as lawyers do, without any aim of settling a question. They may embrace a "deliberate and factitious despair" of learning anything new, for the sake of thinking their own thought perfect.

> When the human mind has once despaired of finding truth, its interest in all things grows fainter, and the result is that men turn aside to pleasant disputations and discourses and roam as it were from object to object . . . a wandering kind of inquiry that leads to nothing. (Bacon, 1874, III, 364; 1960, 88, 67.)

Here Bacon aptly depicts that spongy indecisiveness of mind that can masquerade as "being critical." Today many academics, having grown uneasy about the concept of seeking truth, deal mainly in ingenious detractions, aimed at proving that various forms of supposed excellence are really (but not "in truth") invidious shams (see Haack 1999). If public debate is mere entertainment and debunking is an automatic reflex with no drive to find central, usable insights, we are imitating the learned men whom Bacon criticized, whose scholarship sought just to get by according to some group's limited conventions. But Bacon wanted people to address great issues and strive to be adequate to *their* demands.

Just as analyzing government mismanagement should actually give hope (Bacon wistfully reflected) because it shows the failure was not inevitable, so he will offer "arguments of hope," by analyzing the bad habits of mind and futile methods so far

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used in science (1960, 94). Both mind and senses are unreliable, yet the right method of using mind to correct mind, as we look from a different angle to correct sight, might repair our faults just enough to achieve reliable theories. And this, in essence, has proven true.

Bacon's Checks and Balances

Unlike most revolutionaries (but like the American founders), Bacon offers not a cure, but "helps": checks and balances (1960, 37). First is the thinker's deliberate attention to each pitfall. Second, his limits will be bypassed by involving diverse inquirers. And finally, the theory-making urge itself must be challenged by experimental tests of each assumption and conclusion. The inquirer's thinking will also be affected. What counts as a theory or a scientific term will be guided by his awareness that an eventual empirical test is in the offing. (And, conversely, dubious scientific thought is influenced by the knowledge that no rigorous test will be applied.)

Bacon's paradoxical message—the mind is faulty, the mind can achieve wonders—is usually misunderstood, ignored, or quoted misleadingly.[2] Yet it is at the heart of the mission of SKEPTICAL INQUIRER. For Bacon grasped that scientific method must be intimately linked with a critique of pseudoscience, and that such a critique was not to be just a start-up routine for modern science, but would be of continuing, even increasing, importance. The more that inquiry prospered, the more its intellectual, semantic, and institutional offshoots would be vulnerable to the Idols of the mind.[3]

Bacon saw that the three Idols might generate whole systems of belief, tightly inwoven, fiercely defended, securely institutionalized, and thus hard to dislodge. His fourth category, "Idols of the Theatre," referring to the "vain show" of such a system, incorporates all the others. Though familiar mainly with the Scholastic system, he expected that as freer thought was permitted, many new, specious systems would arise (1960, 61–66, 44). The fame of his initiating role for modern science has obscured his concern with the perennial. Even Stephen J. Gould, in a recent article, mentions only "outmoded," or "older, traditional" systems as Bacon's target, rather than the system-making propensity of the human mind.[4]

Bacon did not envisage the mathematical physics to come; indeed, he could hardly know what a powerful theory would look like. Thus he thought more generally about the search for meaningful patterns in the confusion of phenomena, making his ideas particularly relevant to fledgling and would-be sciences. He hoped that ethics and politics would also yield to his ideas. But the notion of creating a science of society tends to make people aim for universal laws, exact measurements (of something), and the prestige of a system. Soon after Bacon's death, Thomas Hobbes attempted such a science, with simple mechanical principles in the style of physics. But such efforts ought to be "scientific" first in heeding Bacon's warnings about straying from the facts and clinging to assumptions or terminology that cannot lead to new, testable insight. Bacon would have us spend more time with tentative "middle principles." Pioneers such as Freud, eager to make their ideas science, are in danger of taking any plausible mechanism to be a universal principle. Bacon's reluctance to assume uniformity, though misplaced in physics, is more pertinent in studying human nature.

Bacon's list of features in Scholasticism that held back inquiry is surprisingly up-to-date. For example, he includes worship of antiquity; worship of the new; picking on points for argument rather than new discovery; didactic presentation of what is not yet understood; premature formalizing of dubious beliefs; reverence toward an oft-quoted founder; and eloquent elaboration of trivial ideas (1874, III, 289–295).

We still rush to call things knowledge and teach formally what we cannot yet be sure of. In alternative medicine the ancient and the brand-new are equally valued for that trait alone. Excessive quoting of a founder (whether Lenin or Freud) whom experience has superseded suggests that one is not trying to move on. Bacon thought Aristotle and others should be treated as "counselors" to give advice, not "dictators" to enforce belief. Thus he himself offered "not an opinion to be held, but a work to be done" (1874, 289; 1960, 16).

What Bacon called "contentious" learning originated in the twelfth century as a laudable attempt to consider more than one view. But the formal debate had become a mere contest in which flooring an opponent took precedence over gaining new insight. Similarly, modern talk shows, debates, and documentaries may virtuously state contrasting views without working them over to reach new insight.

Bacon's value is in pressing us to question the systems or rhetorical habits of many modern gurus, from Hegel, Marx, and Freud to Derrida, Foucault, and Lacan. Posing questions of pertinent concreteness is, to be sure, a central intellectual skill. Mastering it may require a long struggle with one or more slippery systems finally abandoned. Alexander Herzen, in nineteenth-century Russia, discovered in Bacon's *New Organon* a radicalism more exact than the left-wing Hegelianism of his time. This quintessential liberal critic of right and left extremes felt surprising affinity with Bacon's thought, as we may also.[5]

Dilution and Misunderstanding of Bacon's Method

Bacon's ideas were both heeded and ignored in the centuries following. His insistence that theory be in continual interchange with experiment is fundamental to science and was assumed by Galileo, Kepler, and Newton. Yet the rise of mathematical physics, which seemed to contain its own safeguards against error, encouraged renewed trust in reason alone. Descartes's influence also gave authority to the mathematical mind and reasserted the old hunger for intuitive certainty, in contrast with Bacon's portrayal of a tricky, self-doubting, circuitous quest.

In the 1660s, promoters of experimental methods in England hoped that direct study of nature would offer a refuge from the theological wrangling and ensuing violence of the Civil War. Bacon's talk of enchanted mirrors and idolatries of mind had an almost Calvinist ring to those eager to link religion with the clear light of reason. Even Robert Boyle, who was closest to Bacon in his methods, intentions, and interests, wanted science and religion mutually to vindicate one another in "natural theology." But Bacon regarded scientific assumptions derived from

religion as "anticipations of nature" which had always prevented sound discoveries. Specifically, he rejected attempts to use the book of Genesis as an authority for science (1960, 65).

But in the heyday of natural theology (the eighteenth century), this was forgotten, and it was possible for a geologist to think he was heeding Bacon just because he looked at physical evidence, though his purpose was to vindicate the account in Genesis. The historian of science Charles Gillispie points out the discrepancy while offering another distortion. He derides Bacon for his "popular" notion that science required "not difficult abstract thought but only patience and the right method." He makes the common mistake of assuming that some mechanical ascent from experiment to theory is all that Bacon proposed (Gillispie 1951, 62–63; 1960, 81–82). Actually, Bacon's wished-for method of constantly questioning and retesting one's thought, going from works to axioms and back, as he put it, could hardly be more difficult (1960, 117).

Bacon feared that people would judge his ideas wholly by his tentative suggestions for moving from data to low-level hypotheses.

In fact, Bacon feared that people would judge his ideas wholly by his tentative suggestions for moving from data to low-level hypotheses. And that is exactly what has happened. These proposals (which have some limited value) are usually cited as *the* Baconian method, then dismissed as inadequate. Often, as Henry Bauer does in *Scientific Literacy and the Myth of Scientific Method*, critics proceed to their own view of what is important, ending up with reflections similar to Bacon's about pitfalls in the mind (Bauer 1992, 19, 147–50).[6] Bacon himself said that his positive proposals should be thrown out if they didn't serve. What mattered was the empirical testing of each theory's assumptions and conclusions, neither accepting old dogmas nor hurriedly forming new ones. For "the art of discovery" would also improve as science advanced.

The point is that Bacon's "method" is really a meta-method, a set of principles underlying method. He assumed that native wit would generate theories and that the real problem was to discipline them (1960, 130).

But the false "Baconianism" is not the only shadow blotting out Bacon's meaning. A common misconception is that he wanted science to aim at power instead of truth.[7] He is associated with the modern slogan, "knowledge is power," which he did not say. Usually, people mean by it that knowledge will bring us worldly triumph. Or, at best, that knowledge brings power to humanity in the form of useful technology. Bacon did want to achieve the latter eventually. But he was referring to the proof of scientific theories in saying:

> Knowledge and power meet in one; for where the cause is not known, the effect cannot be produced. Nature to be commanded must be obeyed; and that which in contemplation is as the cause is in operation as the rule. (1960, 3)

That is, only by making nature act a certain way (exercising "power") can you be sure that you understand how it does act, and only by knowing that can you control it.

This simple idea, like Dewey's "learning by doing," is far-reaching in implication. It reflects an appreciation of how people usually do behave: they talk highfalutin nonsense that is far from any facts. In Bacon's famous triad, they produce "fantastical," "contentious," or "delicate" learning; statements that are false, rhetorically persuasive only, or merely aesthetic wordplay (1874, III, 282).

Bacon's hope of *eventual* technology is regularly confused with his methodological concern with experiment (power) to verify knowledge.[8] He didn't want people to stop at quick practical gains. To shrink from intellectual challenge was as cowardly as to fear testing one's suppositions against reality. "Works themselves are of greater value as pledges of truth than as contributing to the comforts of life." Yet he did believe that to ease human misery was a noble purpose. Most people, he said, seek knowledge for professional advancement, profit, or to triumph over rivals; sometimes for idle curiosity. The benefit of one's country was a higher end, and better than all these, the good of mankind (1960, 70, 124, 129; 1874, 294–95).

In *The Advancement of Learning*, Bacon explained that by "use" he didn't mean achieving wealth or success, but what would be "solid and fruitful" as opposed to "vain and fantastical." If it is real knowledge, it has implications; it leads on, and makes one want to try it out. The hypothetical path to concrete reality should be intelligible, however complex. Sometimes people embrace dense ideologies of politics or psychoanalysis while avoiding the question, "But how exactly will any of this help?" even though their stated purpose is social reform or healing.

Grand philosophic systems are the fruit of struggle with some human problem. If their adherents retreat to obscurantism, often they have failed and refuse to admit it. When Khrushchev (a Baconian at times) asserted that there is "no Communism without sausages," the Marxist-Leninist experts in Moscow saw him as a buffoon. But his down-to-earth concern about hunger was part of a drive to truth that also made him speak out about Stalin and recognize the madness of nuclear war.[9]

What is called "utility" or "pragmatism" can be given different slants. William James tended to accept the practical value of ideas (loosely applied) that might not strictly be true. George Orwell, in *1984*, showed the dire everyday consequences of living by lies. For Bacon, practice proved the worth of ideas, but also (as for Orwell) showed the failure of false ones.

Bacon saw clearly the dichotomy between the shifty language of men and nature's power, which could not be bought off by flattery or incantation. "To overcome not an adversary in argument, but nature in action" was his aim and the most important distinction he made (1960, pref., 36). He knew he was surrounded, as we are now, by adroit rhetoricians who refused to accept that words sometimes succeed and sometimes fail to get close to the things they purport to describe, and that it matters. The idea that thought can never be anything but rhetoric or "conversation" will only satisfy those who never feel obliged to act, and therefore to get reality right.

Iron and Love, Science and Art

Our literary-aesthetic traditions place great value on the metaphorical use of words that reached its height in the poetry of Bacon's day. This drew on the very habits of symbolism that Bacon saw must be eliminated from strict science, which uses language differently. The query, "Is this really love?" will never fully parallel, "Is this really iron?" We have agreed-upon tests to determine that a thing is iron. Love is an open concept, and iron, since modern chemistry, a closed one.

Science adds knowledge by showing what can't be. Mystical thinking sets no such bounds. Its glory is to give *meaning* to every perceived pattern, and its method permits any number of meanings apply. Sensitivity in pursuing metaphors is essential to art; it is needed only sparingly in science. Today, the revivers of pre-scientific medicine often use language evocatively, as advertisers do, piling on terms without indicating and proving what thing does what. Attempting to heal by suggestion or placebo is not alternative, but "aesthetic" medicine.

In setting himself against such habits, Bacon was indeed saying that the aesthetic way of thought could not be the scientific one, and people have been saying "ouch!" ever since. But should they? Must we have one big thing, the unified art-science that has become so fashionable a craving, rather than two different, equally valuable things? Must the universe melt down into a beautiful dream of our own—can it not be seen as a separate thing that we must specially equip our minds to decipher?

Science seeks ways to give a definite "no" to a plausible idea; in literature, plausibility is all. If a Shakespeare play has many interpretations, we say it is rich and complex. If a natural phenomenon does, we say the science is incomplete. Art frees us by creating a refuge against the time flux, but science frees us by enabling us to "command" nature by "obeying" her. It uses necessity to create freedom, as art uses freedom to create its own formal necessity.

Art may spur us to a scientific inkling; science, to an aesthetic one but that is all. The distinction should be cherished, not broken down. It permits us to value our mental motions for their own sake, or to adapt them for use in action, without confusion or self-deception.

The mingled promise and disarray of natural philosophy in his time led Bacon to appreciate two great freedoms of the mind. We can question whole systems that seem to violate evidence or logic. It does not matter how many people swear by such beliefs, or for how many centuries they have done so, or with what coercive power. But we can do better than reject the affirmations of the madding crowd. We can thread our own path through the forests of unsorted experience, trusting our minds not to guess right, but to devise tests for detecting falseness. Bacon did no science that today would have won him a Nobel prize. He founded no schools of philosophy. He was not, like Aristotle, "the master of them that know." But he was the friend of those who think, and for that reason, his writings should not be laid aside.

Notes

1. References in the text to the aphorisms in Bacon 1960 give the aphorism number put in Arabic numerals (all in Book I) for convenience in consulting other editions. References to *The Advancement of Learning* are those cited from Bacon 1874, Vol. III.

2. For a detailed account of how Bacon's actual words are ignored and old misconceptions continually revived, followed by dismissive attacks, see Vickers (1992). As a counterpoise, he recommends Urbach 1987 and Perez-Ramos 1990.

3. Needless to say, history contradicts James McClenon's claim that "pseudo-science" is a recent conception invented out of sociological need. He suggests that "science arose from a type of innovation but was forced to create deviant sciences just to survive." Actually, that crucial "innovation" was precisely to reject older methods similar to those of today praised as "deviant" by McClenon (1974, 30).

4. Gould 1999, 74–75. Unlike most citers of Bacon, Gould does appreciate the centrality of the Idols.

5. Herzen's interest in Bacon was only appreciated recently by Aileen Kelly (1980). François Roustang writes of his disillusionment with the psychoanalyst Jacques Lacan in terms that also parallel Bacon's critique of meretricious systems (though not referring to Bacon). The antiempiricist Lacan spoke, for example, of "the fatal contamination of analytical knowledge by the effects of practice"—i.e., seeing patients (1990, 10).

6. Despite his disparagement of a "myth" in his title, Bauer finds that, yes, Virginia, there is a scientific method, consisting of "reality testing," since (as Bacon might have put it) beyond science "stands nature, which we cannot force to behave in any other way than what comes naturally" (150).

7. As by Gerard Holton, who makes a misleading contrast between Bacon's "research program," aiming at "omnipotence," and Newton's, aiming at "omniscience": "basic" versus "applied" science. But Bacon sought basic science and truth, just as Newton tied theory and experiment together as Bacon wished. Holton's book aims to distinguish science from "the world-view against which Descartes and Galileo fought," pointedly omitting Bacon (1993, 109, 114–15, 119).

8. As by Neil Postman (1992). His important critique of our cultural submission to technology cites Bacon as exclusively concerned with "Power and Progress." And yet, like Bauer (1992), he concludes with intellectual concerns similar to Bacon's.

9. Khrushchev's 1954 question, "and what sort of Communist society is it that has no sausage?" caused Molotov to disparage him as a "practicist." In 1958, Khrushchev said that he was proud to be one (Frankland 1967, 148).

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Worlds in Collision

Applying Reality to the Paranormal

Paranormal claims are a double-edged sword, and many believers would likely be unhappy with the logical implications of their beliefs. Our world would be a very different place if paranormal abilities truly existed. Psychic powers, if they were real, would raise serious ethical and philosophical questions regarding individuality, privacy, freedom, and free will.

BENJAMIN RADFORD

The paranormal world and the real world are two separate domains, and odd things happen when the two meet. Skeptics live in a world without unnatural causes, where unexplained phenomena can be attributed to a lack of information instead of mystical forces. Skeptics see coincidences as a natural result of a random world and personal experience as subject to myriad distorting influences, including belief systems, mood, and expectation. Many believers, on the other hand, live in a world where miracles exist, meaningful coincidences are guided by higher powers, and personal experience is the ultimate truth.

But on one level, we all share the same world; we drive on the same highways, eat the same food, see many of the same

films. A skeptic might watch *Poltergeist* or *The Sixth Sense* and enjoy the film as good fiction, while a believer might say, "Well, it's a movie—but that really does happen," much the way a film about, say, a murder case is clearly fictional, yet based in reality.

Skeptics are often accused of not taking psychic powers seriously, of having closed minds regarding the paranormal. So let's take the believers seriously and picture what the world would be like if certain psychic powers really did exist.

Ursula Roma

The Double-Edged Sword of the Paranormal

Psychic phenomena are claimed to have many variants, prominent among them precognition (knowing the future); clairvoyance ("clear seeing," also called remote viewing); and telepathy (mind reading). Imagine that such psychic powers did exist: What would it mean in the "real world" if psychics really could read minds and "see" events far away in time and distance?

Telepathy and Clairvoyance

• The use of psychic power would be a gross and unethical violation of privacy. What right does anyone else have to read your mind, to have access to the most intimate details of your life? Would you want to associate with people who had such an ability? Any psychic could watch as you make love, scold your children, or fill out your taxes. You could have no secrets; no details of your life would be private or personal. Anything you think, feel, or do could be accessed, reported to others, or used for blackmail.

• If psychics were real, professions that involve deception would be worthless, including undercover police and detectives, industrial and international spies, etc. Furthermore, criminal organizations would employ them to stay a step ahead of the law. Organized crime would have psychics on hand to screen new recruits for police informants, and bank robbers wouldn't need to case their targets, simply going right for the richest safe-deposit boxes or bank customers.

• There would be few or no mysteries or accidents if psychic powers existed. No one would wonder why EgyptAir 900 went down; we'd have clear, accurate answers from psychics and confirmed by science. They would have warned us about problems at Three Mile Island, Chernobyl, and with the Challenger space shuttle. Of course, psychics wouldn't be expected to necessarily *solve* the problems; after all, they're not nuclear or rocket scientists. But surely they would let us know if a national (or international) tragedy is looming ahead.

• Psychics would be held responsible for the powers they claim. Along with power comes responsibility; if psychics really did have powers, then they would know that Tim McVeigh was going to bomb the federal building in Oklahoma. If they didn't sense that, then they aren't psychic, and if they *did* sense it, they didn't warn anyone and are just as culpable as McVeigh. Having prior knowledge of a crime and failing to report that information can be considered conspiracy, a felony offense. Perhaps following a terrorist attack police would do well to incarcerate psychics until they can prove they *didn't* have foreknowledge.

• In a similar vein, psychics would be held liable for incorrect information. Just as engineers and scientists who give police or the FBI false or misleading information can be prosecuted, so could psychics. When police psychics name the wrong suspect or direct search teams looking for a body to an empty lake or woods, they should be held responsible. During the TWA 800 investigation that began in 1996, the FBI was told by a psychic that the explosion was a result of a bomb near

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the left wing. The psychic was found to be wholly incorrect, and should be held to the same standard as other "experts."

• Most psychics would be very, very rich; a handful of correct predictions on the right stocks or in a casino could easily make a gifted psychic wealthy. The common answer for why that doesn't occur, that psychics "don't use their powers *for personal profit*," *is both insulting and laughable. If they* don't use their powers for profit, why do they charge $40 or more for an hour-long reading? It's incredibly naive to assume that all psychics would adhere to such a code of ethics. There are thousands of people around the world who claim psychic powers. Are we to assume that all of them have taken such a vow of relative self-imposed poverty? That question aside, the whole problem could be avoided by psychics simply donating any money they make to help the homeless, feed the hungry, or shelter battered spouses.

Most people would prefer to believe that they control their own actions and make their own decisions in life; but anyone's ability to know the future would prove them wrong.

Precognition and Free Will

• Psychic predictions would be the most accurate type of prediction. We'd know at the beginning of the year what day Princess Diana would die in a car crash and when the stock market will plunge. All we'd have to do would be to check the events off a list as they occur. And unlike predictions based upon "normal" criteria (such as predicting *the number of disease cases by extrapolating current ones or* using past performance of a stock fund), information gleaned from supernatural powers would presumably be much more accurate. Uncertainty in prediction is usually the result of human error or inability to predict unforeseen circumstances. By removing human limitations from the method of prediction and placing it in the hands of a supernatural force or entity, psychic information should be uncannily accurate. (Ignore for a moment the paradox inherent in precognition: The future would be *changed* by knowledge of the future. For example, foreknowledge of an accident—a car crash, for example—would move any responsible person to prevent the tragedy, thus making the precognition inaccurate.)

• Psychics would have near-universal agreement in predictions. Instead of pockets of occasional, correct predictions, we'd get thousands of psychics saying the same thing, coming to each prediction independently. Granted, a person might consult three different doctors with the same malady and get slightly different diagnoses, but they would be pretty similar: one won't claim the problem is a broken leg, for example, *while another insists it's dandruff.*

Perhaps the claim might be that there are different forces at work, and not all psychics can "tap into" powers of equal quality or strength. But to claim that, well, some "higher powers" are better than others just begs the question. Either a prediction comes true or it doesn't, and if two different psychics are consulting two different "powers," and only one gets it right, doesn't that call the entire idea into question? If these paranormal powers are so fallible, why use them at all? We can get bad advice right here on Earth, and it's usually free.

• Accurate psychic predictions would have serious implications for individual liberty, responsibility, and free will. If psychics can tap into powers and see the future, that means that our future is predetermined. Our paths in life would then apparently be already set, yet for the price of a palm reading, we can get a glimpse of our roadmaps.

I suspect that many people who believe in precognition aren't aware that if they are right, they have answered one of the fundamental questions in philosophy, that of free will versus determinism. Most people would prefer to believe that they control their own actions and make their own decisions in life; but anyone's ability to know the future would prove them wrong. Our society presumes that people have free will and assigns individual responsibility to each person accordingly. But there can be no responsibility in a world in which we are all essentially puppets going through scripted roles. *Perhaps if psychic powers were proven real, criminals would be* able to avoid penalties for their crimes. After all, society shouldn't punish people for crimes they had no choice but to commit. If Hitler and Pol Pot were simply following their predetermined paths and could do nothing but commit genocide, surely they are not to blame for the vicious roles given them.

Some psychics, astrologers, and fortunetellers try to get around the free will problem by claiming that their powers show only a *possible* future, that individual free will does exist and can alter the future. But what good is that? Presumably the whole point of tapping into a higher power is to avoid the uncertainty that muddles predictions in our world. One doesn't need to consult a psychic or astrologer to come up with a limp "possible" future of what *might* happen; anyone can do that. Most people want to know what *will* happen, and to them the psychic's disclaimers should ring hollow.

A Question of Evidence

What constitutes evidence for or against a claim varies greatly between individuals. Skeptics generally require a higher standard *of evidence to believe claims than the average person,* while believers and New Agers may rely heavily on "intuition," "feelings," "vibes," and so on to guide them.

Presumably, people who accept paranormal explanations for phenomena they find mysterious don't apply the same criterion to other facets of their lives. Say, for example, a psychic or astrologer had car trouble and took her vehicle to a mechanic.

WORLDS IN COLLISION

Continued on page 61

Why Bad Beliefs Don't Die

Because beliefs are designed to enhance our ability to survive, they are biologically designed to be strongly resistant to change. To change beliefs, skeptics must address the brain's "survival" issues of meanings and implications in addition to discussing their data.

GREGORY W. LESTER

Because a basic tenet of both skeptical thinking and scientific inquiry is that beliefs can be wrong, it is often confusing and irritating to scientists and skeptics that so many people's beliefs do not change in the face of disconfirming evidence. How, we wonder, are people able to hold beliefs that contradict the data?

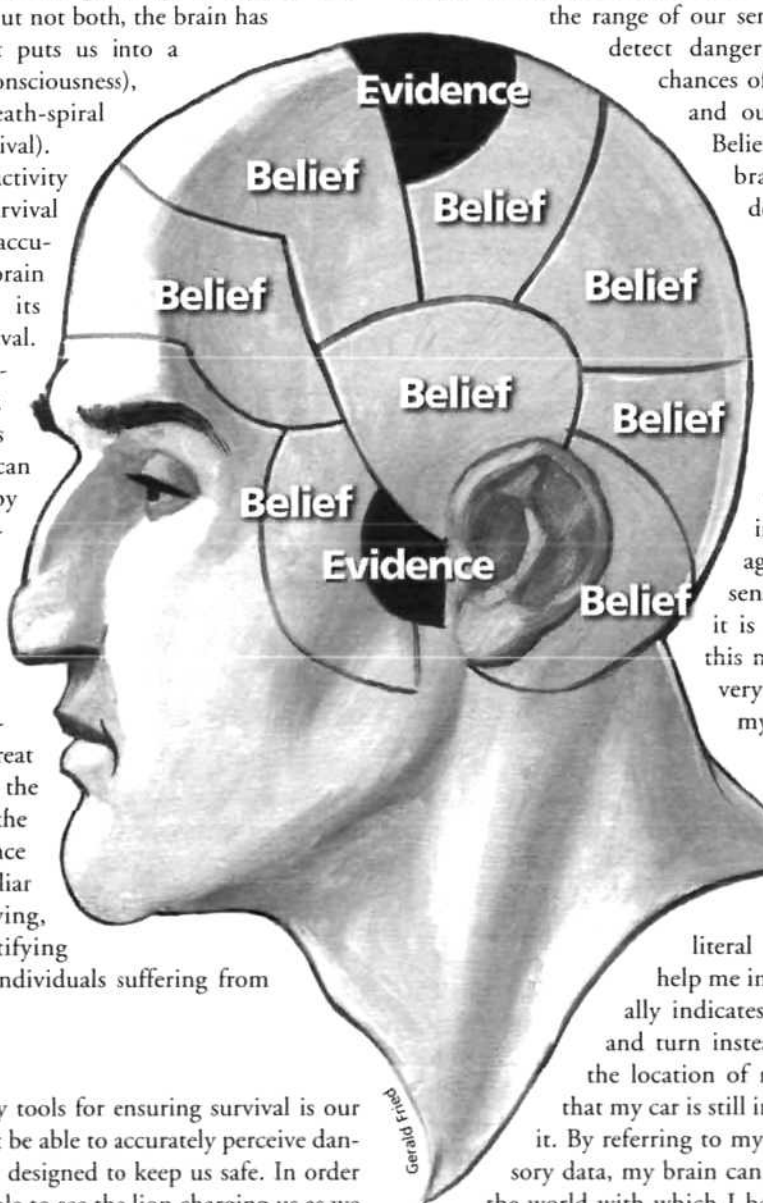
This puzzlement can produce an unfortunate tendency on the part of skeptical thinkers to demean and belittle people whose beliefs don't change in response to evidence. They can be seen as inferior, stupid, or crazy. This attitude is born of skeptics' failure to understand the biological purpose of beliefs and the neurological necessity for them to be resilient and stubbornly resistant to change. The truth is that for all

their rigorous thinking, many skeptics do not have a clear or rational understanding of what beliefs are and why even faulty ones don't die easily. Understanding the biological purpose of beliefs can help skeptics to be far more effective in challenging irrational beliefs and communicating scientific conclusions.

Biology and Survival

Our brain's primary purpose is to keep us alive. It certainly does more than that, but survival is always its fundamental purpose and always comes first. If we are injured to the point where our bodies only have enough energy to support consciousness or a heartbeat but not both, the brain has no problem choosing—it puts us into a coma (survival before consciousness), rather than an alert death-spiral (consciousness before survival).

Because every brain activity serves a fundamental survival purpose, the only way to accurately understand any brain function is to examine its value as a tool for survival. Even the difficulty of successfully treating such behavioral disorders as obesity and addiction can only be understood by examining their relationship to survival. Any reduction in caloric intake or in the availability of a substance to which an individual is addicted is always perceived by the brain as a threat to survival. As a result the brain powerfully defends the overeating or the substance abuse, producing the familiar lying, sneaking, denying, rationalizing, and justifying commonly exhibited by individuals suffering from such disorders.



Gerald Fried

Senses and Beliefs

One of the brain's primary tools for ensuring survival is our senses. Obviously, we must be able to accurately perceive danger in order to take action designed to keep us safe. In order to survive we need to be able to see the lion charging us as we emerge from our cave or hear the intruder breaking into our house in the middle of the night.

Senses alone, however, are inadequate as effective detectors of danger because they are severely limited in both range and scope. We can have direct sensory contact with only a small portion of the world at any one time. The brain considers this to be a significant problem because even normal, everyday living requires that we constantly move in and out of the range of our perceptions of the world as it is *right now.* Entering into territory we have not previously seen or heard puts us in the dangerous position of having no advance warning of potential dangers. If I walk into an unfamiliar building in a dangerous part of town my survival probabilities diminish because I have no way of knowing whether the roof is ready to collapse or a gunman is standing inside the doorway.

Enter beliefs. "Belief" is the name we give to the survival tool of the brain that is designed to augment and enhance the danger-identification function of our senses. Beliefs extend the range of our senses so that we can better detect danger and thus improve our chances of survival as we move into and out of unfamiliar territory. Beliefs, in essence, serve as our brain's "long-range danger detectors."

Functionally, our brains treat beliefs as internal "maps" of those parts of the world with which we do not have immediate sensory contact. As I sit in my living room I cannot see my car. Although I parked it in my driveway some time ago, using only immediate sensory data I do not know if it is still there. As a result, at this moment sensory data is of very little use to me regarding my car. In order to find my car with any degree of efficiency my brain must ignore the current sensory data (which, if relied on in a strictly literal sense, not only fails to help me in locating my car but actually indicates that it no longer exists) and turn instead to its internal map of the location of my car. This is my *belief* that my car is still in my driveway where I left it. By referring to my belief rather than to sensory data, my brain can "know" something about the world with which I have no immediate sensory contact. This "extends" my brain's knowledge of and contact with the world.

The ability of belief to extend contact with the world beyond the range of our immediate senses substantially improves our ability to survive. A caveman has a much greater ability to stay alive if he is able to maintain a belief that dangers exist in the jungle even when his sensory data indicate no

immediate threat. A police officer will be substantially more safe if he or she can continue to believe that someone stopped for a traffic violation could be an armed psychopath with an impulse to kill even though they present a seemingly innocuous appearance.

Beyond the Sensory

Because beliefs do not require immediate sensory data to be able to feed valuable survival information to the brain, they have the additional survival function of providing information about the realm of life that does not deal directly with sensory entities. This is the area of abstractions and principles that involves such things as "reasons," "causes," and "meanings." I cannot hear or see the "reason" called a "low pressure zone" that makes a thunderstorm rain on my parade, so my ability to *believe* that low pressure is the reason assists me. If I were to rely strictly on my senses to determine the cause of the storm I could not tell why it occurred. For all I know it was dragged in by invisible flying gremlins that I need to shoot with my shotgun if I want to clear away the clouds. Therefore my brain's reliance on my "belief" in the reason called "low pressure," rather than on sensory data (or, as in the case of my car, my lack of it) assists in my survival: I avoid an experience of incarceration with myriad dangerous characters following my arrest for shooting into the air at those pesky little gremlins.

Beliefs are not *supposed* to change easily or simply in response to disconfirming evidence. If they did, they would be virtually useless as tools for survival.

The Resilience of Beliefs

Because senses and beliefs are both tools for survival and have evolved to augment one another, our brain considers them to be separate but equally important purveyors of survival information. The loss of either one endangers us. Without our senses we could not know about the world within our perceptual realm. Without our beliefs we could not know about the world outside our senses or about meanings, reasons, or causes.

This means that beliefs are designed to operate independent of sensory data. In fact, *the whole survival value of beliefs is based on their ability to persist in the face of contradictory evidence.* Beliefs are not *supposed* to change easily or simply in response to disconfirming evidence. If they did, they would be virtually useless as tools for survival. Our caveman would not last long if his belief in potential dangers in the jungle evaporated every time his sensory information told him there was no immediate threat. A police officer unable to believe in the possibility of a killer lurking behind a harmless appearance could easily get hurt or killed.

As far as our brain is concerned, there is absolutely no need for data and belief to agree. They have each evolved to augment and supplement one another by contacting different sections of the world. They are designed to be able to disagree. This is why scientists can believe in God and people who are generally quite reasonable and rational can believe in things for which there is no credible data such as flying saucers, telepathy, and psychokinesis.

When data and belief come into conflict, the brain does not automatically give preference to data. This is why beliefs—even bad beliefs, irrational beliefs, silly beliefs, or crazy beliefs—often don't die in the face of contradictory evidence. The brain doesn't care whether or not the belief matches the data. It cares whether the belief is helpful for survival. Period. So while the scientific, rational part of our brains may think that data should supercede contradictory beliefs, on a more fundamental level of importance our brain has no such bias. It is extremely reticent to jettison its beliefs. Like an old soldier with an old gun who does not quite trust that the war is really over, the brain often refuses to surrender its weapon even though the data say it should.

"Inconsequential" Beliefs

Even beliefs that do not seem clearly or directly connected to survival (such as our caveman's ability to believe in potential dangers) are still closely connected to survival. This is because beliefs do not occur individually or in a vacuum. They are related to one another in a tightly interlocking system that creates the brain's fundamental view of the nature of the world. It is this system that the brain relies on in order to experience consistency, control, cohesion, and safety in the world. It must maintain this system intact in order to feel that survival is being successfully accomplished.

This means that even seemingly small, inconsequential beliefs can be as integral to the brain's experience of survival as are beliefs that are "obviously" connected to survival. Thus, trying to change *any* belief, no matter how small or silly it may seem, can produce ripple effects through the entire system and ultimately threaten the brain's experience of survival. This is why people are so often driven to defend even seemingly small or tangential beliefs. A creationist cannot tolerate believing in the accuracy of data indicating the reality of evolution not because of the accuracy or inaccuracy of the data itself, but because changing even one belief related to

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matters of the Bible and the nature of creation will crack an entire system of belief, a fundamental worldview and, ultimately, their brain's experience of survival.

Implications for Skeptics

Skeptical thinkers must realize that because of the survival value of beliefs, disconfirming evidence will rarely, if ever, be sufficient to change beliefs, even in "otherwise intelligent" people. In order to effectively change beliefs skeptics must attend to their *survival* value, not just their *data-accuracy* value. This involves several elements.

First, skeptics must not expect beliefs to change simply as the result of data or assuming that people are stupid because their beliefs don't change. They must avoid becoming critical or demeaning in response to the resilience of beliefs. People are not necessarily idiots just because their beliefs don't yield to new information. Data is always necessary, but it is rarely sufficient.

Second, skeptics must learn to always discuss not just the specific topic addressed by the data, but also the *implications that changing the related beliefs will have for the fundamental worldview and belief system of the affected individuals.* Unfortunately, addressing belief systems is a much more complicated and daunting task than simply presenting contradictory evidence. Skeptics must discuss the meaning of their data in the face of the brain's need to maintain its belief system in order to maintain a sense of wholeness, consistency, and control in life. Skeptics must become adept at discussing issues of fundamental philosophies and the existential anxiety that is stirred up any time beliefs are challenged. The task is every bit as much philosophical and psychological as it is scientific and data-based.

Third, and perhaps most important, skeptics must always appreciate how hard it is for people to have their beliefs challenged. It is, quite literally, a threat to their brain's sense of survival. It is entirely normal for people to be defensive in such situations. The brain feels it is fighting for its life. It is unfortunate that this can produce behavior that is provocative, hostile, and even vicious, but it is understandable as well.

The lesson for skeptics is to understand that people are generally not intending to be mean, contrary, harsh, or stupid when they are challenged. It's a fight for survival. The only effective way to deal with this type of defensiveness is to de-escalate the fighting rather than inflame it. Becoming sarcastic or demeaning simply gives the other person's defenses a foothold to engage in a tit-for-tat exchange that justifies their feelings of being threatened ("Of course we fight the skeptics—look what uncaring, hostile jerks they are!") rather than a continued focus on the truth.

Skeptics will only win the war for rational beliefs by continuing, even in the face of defensive responses from others, to use behavior that is unfailingly dignified and tactful and that communicates respect and wisdom. For the data to speak loudly, skeptics must always refrain from screaming.

Finally, it should be comforting to all skeptics to remember that the truly amazing part of all of this is not that so few beliefs change or that people can be so irrational, but that anyone's beliefs ever change at all. Skeptics' ability to alter their own beliefs in response to data is a true gift; a unique, powerful, and precious ability. It is genuinely a "higher brain function" in that it goes against some of the most natural and fundamental biological urges. Skeptics must appreciate the power and, truly, the dangerousness that this ability bestows upon them. They have in their possession a skill that can be frightening, life-changing, and capable of inducing pain. In turning this ability on others it should be used carefully and wisely. Challenging beliefs must always be done with care and compassion.

Skeptics must remember to always keep their eye on the goal. They must see the long view. They must attempt to win the war for rational beliefs, not to engage in a fight to the death over any one particular battle with any one particular individual or any one particular belief. Not only must skeptics' methods and data be clean, direct, and unbiased, their demeanor and behavior must be as well. □

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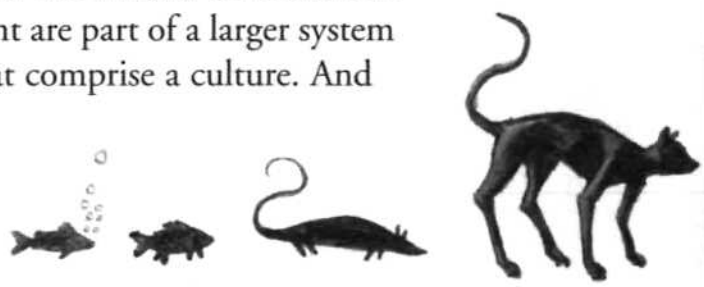
Supernatural Power and Cultural Evolution

An evolutionary perspective that emphasizes the observable consequences of religious faith, and recognizes how beliefs can give rise to behavior that regulates access to essential material resources, may be productive in explaining the early origins and universality of belief in supernatural power.

ANTHONY LAYNG

All human cultures appear to include faith in supernatural power, and it seems that this tradition has played an active and essential role in influencing how our ancestors perceived and adapted to their environment. This relationship between human belief and adaptive behavior may have played a critical role in shaping cultural evolution.

The history of any society can demonstrate how sacred beliefs change over time, how they are created or borrowed, consciously or unconsciously, and how they may be subsequently abandoned. Beliefs about the natural environment and the supernatural environment are part of a larger system of learned ideas and customs that comprise a culture. And



entire cultures change over time in the same way beliefs do. Human populations no longer adapt to environmental change by evolving genetically. We now adapt to change by altering our beliefs and behavior. Human evolution from *Australopithecines to Cro-Magnon, the first of our ancestors* to have the physical features that characterize all human populations today, depended largely on slowly changing gene frequencies. For at least the past 60,000 years, human biological evolution has been relatively inactive. During this time, the evolution of beliefs has come to determine which populations had the greatest capacity to survive.

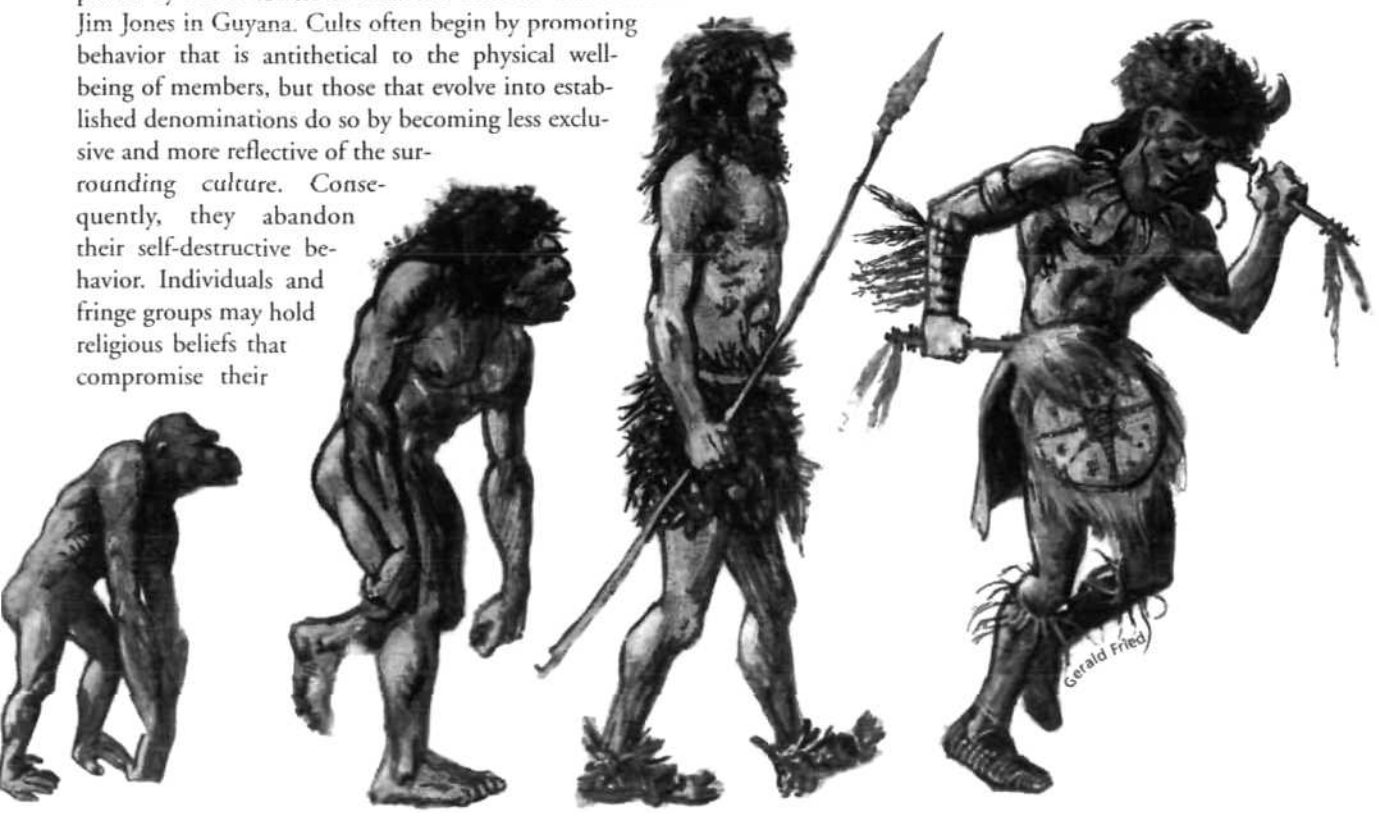
Cultural and Group Beliefs

At an early stage in cultural evolution, all societies began to believe in supernatural power, the common denominator of all religious beliefs. Tribal societies studied by anthropologists have provided numerous examples of belief systems that may be similar to those of our ancient ancestors. Modern American proclivities to endorse many forms of supernatural power may make us more intellectually similar to tribal societies than to *other industrialized ones, but all human cultures today include* faith in some spiritual beings and forces. From an evolutionary perspective, this universality suggests that such beliefs must have played some essential role in ensuring the wellbeing of human populations. And here the reference is *not* to miracles, magical cures, and spiritual intervention. It is the *belief* in such things that is likely to be instrumental in this regard, not the things believed in.

Individuals and small groups are capable of cherishing beliefs that are detrimental to their physical welfare, as exemplified by the followers of Heaven's Gate in California or Jim Jones in Guyana. Cults often begin by promoting behavior that is antithetical to the physical wellbeing of members, but those that evolve into established denominations do so by becoming less exclusive and more reflective of the surrounding *culture*. Consequently, they abandon their self-destructive behavior. Individuals and fringe groups may hold religious beliefs that compromise their survival, but beliefs that are traditional and generalized throughout a society are likely to enhance the survival of that society. It is as if individuals can afford to be really stupid, but the collective wisdom of a society must be far more practical *in its consequence*.

Some populations maintain customs that threaten the survival of certain individuals and, at the same time, help to ensure the survival of the society. For example, the belief that first-born females are cursed and the practice of female infanticide in a tribal society can effectively check population expansion in an environment where unlimited growth would likely lead to mass starvation. Similarly, the traditional prohibition against slaughtering cows in India, where famine was not unusual, meant that many poor people would starve rather than eat beef. But the belief that cows were sacred enabled them and the oxen they produced to survive, thus ensuring that beasts of burden would be available for their essential role in this agrarian society. Had the consumption of beef not been taboo in this largely impoverished and rapidly expanding population, cows would be consumed faster than they could *reproduce, oxen would no longer be available for plowing,* agricultural output would steadily decline, and the entire society would be hard-pressed to survive.

Proposing that traditional faith in supernatural power has utility for the believers is not at all new. Sigmund Freud, who did not much care for religion, nevertheless gave it credit for its emotional functions such as reducing anxieties. And Emile Durkheim, regarded as the first sociologist, proposed that belief in magic and spiritual beings was highly beneficial for the maintenance of society. But anthropologists now are



suggesting that belief in supernatural power is more practical than meeting mere emotional and social needs; it may have played an essential role in ensuring that our ancestors' material needs were met.

Native American Beliefs

To illustrate how belief in supernatural power is capable of providing a reliable supply of scarce goods and resources that sustain a population, I offer the following account of Native American religious beliefs, beginning with the nineteenth century Plains Indians. According to their tradition, success in hunting, warfare, and other important activities was dependent upon the availability of cosmic supernatural power, energy that was inclined to exhaustion over the course of a year or so. Regenerating this finite power required that the entire tribe assemble and perform an elaborate renewal ritual that took several days.

During most of the year, these hunter and gatherer tribes adapted to their environment by dispersing in numerous bands over a large area. Since the bison herds were similarly distributed, as were other food animals and plants, permanently living as a congregated tribe would cause inevitable starvation. However, the bison gathered annually for a mass migration, and at this time a large coordinated hunt by all the warriors of the tribe could usually furnish enough meat to sustain them through the winter when other food was very difficult to acquire.

The renewal rituals, the most famous of which is the Sundance, occurred at the same time that the bison were assembling, ideal timing for the annual hunt. In addition, this seasonal ritual maintained a sense of tribal identity and loyalty, emotionally tying the various bands together, giving them a collective sense of interdependency and common fate, since the absence of even one band meant that the ritual would not be able to regenerate sufficient power. Since these egalitarian societies were in competition for the limited food supply, and only those that were capable of exercising considerable military strength were in a position to be competitive, the tribes whose bands were strongly unified were the most likely to survive in this politically hostile environment.

When the various Plains Indian tribes were settled on reservations, and bison hunting and intertribal warfare ceased, the annual rituals ceased as well, along with other religious rituals such as vision quests and sweat lodge ceremonies. However, even where many converted to Christianity, a traditional belief in witchcraft survived. Now that tribes were politically dependent and their food was furnished by the government, the annual renewal ritual lost its meaning. But faith in witchcraft remained relevant, because it provided an incentive system to maximize sharing between households—strategically important in a place where food and employment were so scarce.

With a belief in evil clandestine witches (in contrast to those promoted today by feminist spirituality groups), an individual with some money or food was inclined to share it with neighbors out of fear that one of them might be a jealous witch, a man or woman who could cast a spell causing the selfish offender some grievous harm. And since witches were believed to be greedy, as well as jealous, households with surplus goods engaged in overt sharing in order to avoid accusations of witchcraft. Rumors about an individual's alleged sorcery could make that person a social pariah. Many were inclined to share because doing so was in conformance with a strong sharing ethic, but for those who needed additional prodding, the fear of witchcraft and not wanting neighbors to suspect you of witchcraft was likely to ensure that most would share.

Eventually, where poverty was much reduced by economic development, belief in witches declined also. Where education and employment have become viable alternatives to poverty, the witchcraft incentive system that maintains generalized sharing is no longer adaptive. When all are poor, sharing makes possible some minimal security, but a regular income devoted to one's own household can provide even greater security. Individuals might still be accused of being witches, but such accusations in an economically improved environment are likely to be dismissed by residents who are doing relatively well as mere jealousy.

Now that there are tribal colleges and increasing employment opportunities on many reservations, a renewed interest in traditional rituals has emerged. Belief in witches is fading, but Sundances, vision quests, and sweat lodge ceremonies are making a comeback, along with the belief that these rituals can affect supernatural beings and forces. How might this be adaptive among people who are educated?

This interest in traditional religion comes at a time when preserving the tribal language and the old customs is difficult and no longer assured, but one can retain an Indian identity by participating in the ancient rituals. Overt expressions of ethnic identity counterbalance the view that Indians have acculturated to the point where reservations and numerous programs with benefits and payrolls for Indians are no longer warranted. Many in the government favor cutting the federal budget that supports the Bureau of Indian Affairs, special scholarships, subsidized housing, comprehensive health care, and so forth that Native Americans very much rely on. If Indians are no different from other Americans, why maintain this special relationship with the federal government? Rituals like pow-wows and Sundances provide overt evidence that Indians are still Indians, in spite of their casinos and mainstream lifestyle, helping to justify their special political status and the material security that this status provides.

Another traditional religious concept has gained urgency in recent decades, the claim that certain places and properties are sacred. Since most Indians are Christians and have formal education, why all this concerted interest in sacred lands? How might this be adaptive? Consider the fact that the American

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public has developed considerable sympathy for Indian ideas about land, and that many successful legal land claim cases have proven to be highly lucrative; some tribes have been granted large tracts of valuable real estate, and others have been compensated with millions of dollars by the courts. Tribal lawyers have given ancient ideas about land a contemporary meaning. It seems quite likely that judges in these cases are more inclined to be generous when the "lost" lands in question are "sacred." Here again, it may be the economic advantages that are at the heart of the matter.

When most Native Americans stopped practicing tribal rituals, scholars came to view this as a "loss" of Indian culture; more recently, when they reestablished many of their traditional ceremonies, it was described usually as cultural "revival." Such terms as "loss" and "revival" of culture are descriptive but lack explanatory capacity. To account for the dynamic nature of religious beliefs and practices, we should view them from an evolutionary perspective, recognizing how beliefs that are adaptive tend to be preserved, and how ideas that lose their utility tend to moderate, be reinterpreted, or even disappear.

Modern Versus Primitive Societies

Primitive societies with stable social environments are, understandably, resistant to cultural change. Since their beliefs and traditions have adapted to an environment that is relatively constant, their religion will reflect cultural conservatism, suitable for preserving the status quo. For example, they may stress adherence to tradition by being convinced that deified ancestors insist on the old ways. Similarly, their mythology, taken as literal truth, encourages the same conservatism by illustrating how terrible things can happen when the gods are displeased by individuals who break the mores. Belief in witchcraft, as illustrated above, also discourages deviance from traditional norms.

Isolated primitive societies need unchallenged faith in supernatural power. Unfettered rational thinking, objectivity, and skepticism cannot be tolerated, since such challenges to tradition are likely to lead to social change, a very risky development under such circumstances. If they subjected religious belief to scientific verification, if they accepted only what could be observed and experienced, their faith would be so undermined as to be ineffectual in maximizing the availability of essential material resources. Contemporary Americans, on the other hand, can retain or challenge belief in supernatural power without threatening the longevity of their society. The natural resources they depend on are controlled by bureaucratic government, industrial corporations, complex technology, and other secular means.

Industrial countries, in contrast to tradition-oriented societies, rely on flexible forms of social control, such as public opinion and a jury system. This is suitable (adaptive) because the social environment is constantly changing, thus requiring functional equivalents to belief in supernatural power. For example, once it became common practice for conjugal couples to delay or forgo marriage, we changed laws that discriminated against individuals for "living in sin." Similarly, rather than depending exclusively on faith healing and magical cures, most of us now rely on physicians. We have not abandoned religious methods to encourage conformity, and many Americans with severe health problems continue to rely both on traditional prayer and modern surgery. But the survival of our society no longer requires consensus on the idea that supernatural beings and forces sustain us. We, unlike isolated tribal societies, can afford to be skeptical and to encourage rational thinking.

Isolated primitive societies need unchallenged faith in supernatural power. Skepticism cannot be tolerated since such challenges to tradition are likely to lead to social change.

So what might we conclude about belief in supernatural power? What is the most likely explanation for why our early ancestors came to believe in supernatural power? Since this idea turned out to be so valuable for primitive societies, is it reasonable to assume that the belief came from revelation, from the supernatural world? Most people would answer yes because, if true, it seems to confirm that supernatural beings actually exist, and that is what a majority of people believe. But, of course, an explanatory theory cannot be validated by a show of hands.

It is more scientific to consider the possibility that, as the human brain evolved, there was selection for those who were inclined to believe in supernatural power, resulting in a genetic propensity to so believe. Some scholars, inspired by evolutionary psychology, are promoting this theory, but it seems to imply that today's atheists have brains too regressive to recognize what for "normal" people is obvious, that believing in God is just natural. This inborn belief theory has some intellectual appeal, but it lacks hard evidence, as do theological explanations for belief in supernatural power.

Admittedly, at one point in our evolution, human brains became capable of conceptualizing supernatural power, an ability that requires considerable capacity for abstract thought. And, again, given the important adaptive potential of belief in supernatural power, its capacity for aiding the physical survival of a population, early human societies armed with this idea would have been the most likely to last. Over time, with only a Stone Age technology, all surviving societies would exemplify this belief.

This analysis is neither politically correct nor likely to be intellectually palatable to most Americans, for it renders irrelevant the existence of supernatural power and the spiritual beings (God, angels, saints, Satan, etc.) who personify such power. For those, however, who are willing to subject religious convictions to scientific investigation, viewing such concepts from an evolutionary perspective may be highly instructive in suggesting how and why belief in supernatural power emerged and helped to determine the course of cultural evolution. □

The Magic of Therapeutic Touching

MARTIN GARDNER

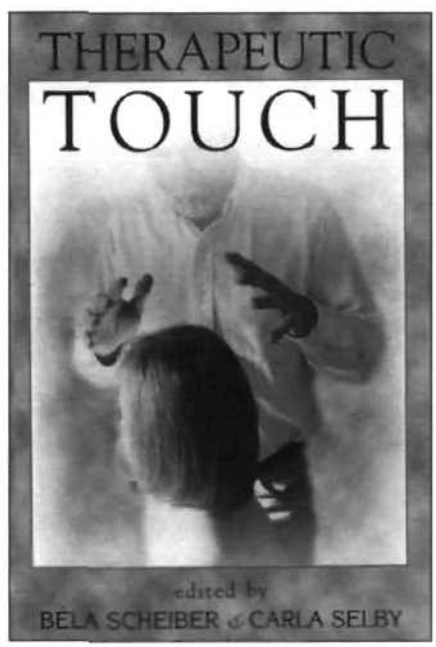
Therapeutic Touch. Edited by Béla Scheiber and Carla Selby.
Prometheus Books, Amherst, New York, 2000. ISBN 1-57392-804-6. 360 pp. Cloth, $26.

Millions of ill people around the world, especially in the United States, Canada, Germany, and France, are turning away from mainstream medicine to embrace a bewildering variety of bogus alternative treatments. One of the most bizarre is a growing conviction among American nurses that they possess a mysterious healing power called the therapeutic touch (TT).

The term is misleading because actual touching is not involved. A nurse merely waves his or her hands a few inches above a patient's body. The theory is that everyone is surrounded by an invisible, nonelectric energy field totally unknown to physicists. If a nurse is healthy, energy from her field is transmitted to the ill person. The belief is that this relieves pain, anxiety, and depression, speeds the healing of wounds, and hastens the cure of every imaginable disease.

A vast and growing literature of books and research papers, published mainly in nursing journals, greatly overshadows the few reports of investigations by skeptics. *Therapeutic Touch,* issued this year by Prometheus Books, is the first book to "debunk" (let's not avoid this word) the wild claims of nurses now so energetically promoting TT.

Therapeutic Touch is a collection of twenty-three papers on TT edited by Béla Scheiber and Carla Selby. Scheiber is a systems engineer, founder and president of the Rocky Mountain Skeptics, and a member of CSICOP's executive council. Anthropologist Selby is a CSICOP consultant. All but three of the research papers in their valuable anthology provide evidence that the human energy field does not exist, and that the seeming efficacy of TT is fully explained by the placebo effect, by the fact that many ills spontaneously go away, and that the experimental evidence for TT rests on flimsy, poorly controlled testing by true believers who unconsciously bias the results. None of the believers' research has yet appeared in a reputable medical journal.



The book's first paper, by registered nurse Jack Stahlman, is an excellent summary of TT history. Belief that certain individuals have the power to heal by the "laying on of hands" goes back to ancient times. The healings of Jesus involved touching. Kings who ruled by divine decree were believed to have a "royal touch." The Middle Ages and Renaissance swarmed with famous touch healers, and today's fundamentalist and Pentecostal faith healers like to touch the sick. Oral Roberts still firmly believes that energy flows from his hand to cause miraculous healings. The notion of human energy fields is common in Eastern religions, especially in Hinduism and in the Theosophical movement founded by famous charlatan and fake medium Madame Helena Blavatsky.

Stahlman covers the work of three women who have been top drumbeaters for TT: Dora van Gelder Kunz, Dolores Krieger, and Martha Rogers. Kunz, now in her late nineties, is a theosophist convinced she has clairvoyant powers. She claims to have read the "auras" (a theosophical term for human energy fields) of thousands of people. She was president of the Theosophical Society for

Martin Gardner's books on pseudosciences range from Fads and Fallacies in the Name of Science *(1952) to* Science: Good, Bad, and Bogus *(1981), and* Weird Water & Fuzzy Logic *(1996).*

twelve years, chairman of the Theosophical Publishing House, and chief editor of *The American Theosophist*. She is the co-author of a book on chakras (alleged energy centers in the body), and author of *The Personal Aura* (1991).

In the late 1960s Kunz introduced TT to Krieger, a registered nurse now considered the true mother of TT. The former head of the nursing department in New York University's School of Nursing, Krieger taught the nation's first course on TT in 1993 at NYU. She's the author of several books, notably *The Therapeutic Touch: How to Use Your Hands to Help and Heal* (Prentice-Hall, 1979; reprinted by Simon and Schuster, 1992), and *Accepting Your Power to Heal* (Bear and Company, 1993). She has also published many articles in nursing periodicals and is a popular lecturer on TT.

Krieger is a devout Buddhist. Like her friend and mentor Kunz she has been strongly influenced by the writings of British theosophist Charles Leadbeater. Stahlman quotes from one of her books a passage which claims that premature babies who were "declared dead" were revived by TT.

Krieger takes for granted the reality of chakras. She recommends that TT practitioners visualize a color while they are projecting energy. She claims that a skilled touch therapist can store energy in a cotton ball by holding the ball between her hands. The cotton will, she writes, retain the energy for several hours to be used by "healees" to "unruffle" their maladjusted energy field.

At the moment TT's most enthusiastic promoter of TT is Martha Rogers, a nurse whose main books are *An Introduction to the Theoretical Basis of Nursing* (1970), and *Science of Unitary Human Beings* (1986). Rogers believes that the human energy field is responsible for ESP, precognition, Kirlian photography, out-of-body experiences, and TT. The Society of Rogerian Scholars issues a journal called *The Rogerian*. [See Jef Raskin, "Rogerian Nursing Theory: A Humbug in the Halls of Higher Learning," SKEPTICAL INQUIRER, September/October 2000.]

Scheiber and Selby, in several chapters, deal with the explosive growth of TT. There are an estimated 40,000 nurses in the U.S. who now practice the technique with or without the consent of their hospitals. TT is taught in more than eighty colleges.

Like so many other flourishing pseudosciences, TT has not lacked funding. The U.S. Department of Health and Human Services gave $200,000 to a Buffalo nursing center for TT research. The Pentagon's Department of Defense handed $355,225 to the University of Alabama to study the effect of TT on burn patients. NANDA (North American Nursing Diagnosing Association) has approved TT. It is being lauded by the National League for Nursing, the American Nursing Association, and the American Theosophical Society. The Internet has many Web sites defending TT.

Dolores Krieger

The funniest chapter in *Therapeutic Touch* is by philosopher Dale Beyerstein. It records his tireless efforts to locate the elusive "Dr." Daniel Wirth (the "doctor" is for a law degree), who keeps publishing papers on his sensational TT results. Wirth turned out to have a master's degree in parapsychology from John F. Kennedy University, and to be a firm believer in almost every aspect of the psi scene.

Among tests of TT that yielded negative results, two are outstanding. A clever test devised by James Randi for his foundation showed only chance results in efforts by a TT practitioner to detect an energy field with her hands. Randi has a $1.2 million offer, with no takers, for anyone who can detect such a field.

JAMA (*The Journal of the American Medical Association*), in Volume 279, April 1, 1998, published "A Close Look at TT" by Emily Rosa, her mother, and two associates. It reported on a test devised by Emily for a science fair project when she was nine. The test was so simple that it seems incredible that no TT believer ever thought of it. Twenty-one practitioners, convinced they could feel an energy field (it causes a "tingle" in their hands), put their hands, palm up, through holes in an opaque screen. They were asked to tell which hand was under a hand held by another person a few inches above one of the practitioner's palms. The palms were selected by coin flips. Results were at chance level. In a letter to *Time* (May 4, 1998) Krieger predictably scoffed at the test, calling it a "parlor trick," and expressing amazement that *JAMA* would publish such a farce.

Psychologist Ray Hyman, in his wise introduction to *Therapeutic Touch*, likens TT to the phrenology craze, and points out that TT is one of those self-sealing belief systems that are unaffected by criticism or negative testing. The burden of proof, he insists, is on the defenders of TT, not on skeptics. He closes with his usual warning that skeptics who attack TT should strive to be fair in their criticisms, and to remember that the ultimate goal is not to debunk but "to promote rational and scientific inquiry no matter what the outcome. . . ."

Faults and Paranormal Favoritism in Flawed Encyclopedia

DAVID BLOOMBERG

Encyclopedia of Pseudoscience. Edited by William F. Williams. Facts on File, Inc., New York, 2000. ISBN 0-8160-3351-X, 416 pp. Hardcover, $75.

Everybody knows that you shouldn't judge a book by its cover. But sometimes it's difficult not to. For example, a skeptic may wonder why a book called the *Encyclopedia of Pseudoscience* says on its back cover that acupuncture, homeopathy, and therapeutic touch are "serious practices moving forward into formal science." (Oddly, the reader later finds that "therapeutic touch" is nowhere to be found inside.)

Getting past the cover, the book begins with a preface explaining that the writers for each item were "free to take his or her own line" without a prescribed viewpoint. This again seems a bit odd for a book discussing pseudoscience, which is defined in *Webster's New World Dictionary* as "any system of methods, theories, etc. that presumes without warrant to have a scientific basis or application." A book discussing pseudoscience should have a viewpoint: objective and scientific.

Also, as an encyclopedia, it should be a point of reference. It's difficult to see how this volume can serve such a function if the writers' "different viewpoints are reflected in the variety of attitudes implicit in the following pages," as Williams says. It reads more like a collection of opinions than an encyclopedia.

Williams himself seems skeptical, as his introductory essay shows. He says: "From the tone of the above and from many of my own entries in this book, it will be obvious that I approach this subject from the point of view as a scientist." Unfortunately, none of the entries are labeled, so the reader cannot know which were written by him.

Several of the four "advisers and consultants" are names familiar to the readers of this magazine. Jerome Clark, of the J. Allen Hynek Center for UFO Studies, and Marcello Truzzi, of the Center for Scientific Anomalies Research, are two that leap out as seeming to be misplaced in a tome that should be fostering skepticism about the topics they are most involved with. Both of these men contribute introductory essays outlining their positions.

Their influence also appears within the entries themselves. The UFOlogy entry mentions the J. Allen Hynek Center for UFO Studies twice. The "See also" reference at the end of that entry refers readers to other entries on abductions, flying saucers, the Mutual UFO Network, and the TV show *The X-Files.* It does not refer to the entries on Phil Klass or CSICOP.

The entry for the J. Allen Hynek Center is given about twice as much space as either CSICOP or the Skeptics Society. The Center for Scientific Anomalies Research is also given more space, and it discusses how Truzzi left CSICOP (in 1977) because he saw it as "biased against anomalies rather than centered upon an open-minded skepticism based on the best scholarship." Similarly, *Fate* magazine gets its own entry, but three skeptical journals are lumped together as "Skeptics' Magazines." The reader may be forgiven for concluding that these are all more than just coincidences.

Moving into the contents of the entries, we find errors that one would not expect in a work of this type. For example, the Ouija board entry reports that its name came from combining *oui* (French for "yes") and *ja* (German for "yes"). While this is a common tale, others have found that it was actually an advertising story, not the real origin. Furthermore, that same entry reports that William Fuld bought the rights to the board from its creator, Elijah Bond. More reliable histories (such as the one found at the Museum of Talking Boards, www.museumoftalkingboards.com) indicate that Bond was one of three inventors, and Charles Kennard was the first to sell the board, through the Kennard Novelty Company. His investors later threw him out and installed Fuld in his place. The encyclopedia entry says Fuld ran the Southern Novelty Company and later changed the name to the Baltimore Talking Board Company, but the "Museum" Web site says the post-Kennard company was named the Ouija Novelty Company, and Fuld later changed it to the William Fuld Company. To compare the reliability: the "Museum" history quotes from advertisements, catalogs, and publications of the time and has photos of the various old boards; the encyclopedia entry is written by an unknown person with no listed references and a twenty-year-old book given as suggested further reading.

Similarly, the entry on Harry Houdini claims he was killed because a fan punched him in the stomach to test his ability to withstand such blows. While the event did happen and the story is frequently told this way, Houdini actually died of appendicitis unrelated to the punch. The encyclopedia spreads the urban legend version of his death rather than the correct one. Other errors, major and minor, can be found throughout.

Even in entries without factual errors, it appears that in trying to be unbiased, they have often avoided drawing conclusions. For example, the first entry, "Abductions, Alien," provides explanations in almost a he-said/she-said manner reminiscent of the way the media often cover such issues. It lists several

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well-known cases of supposed abduction without mentioning that they had been rather decisively explained without bringing in little grey men.

Another example can be found in the entries on auras and Kirlian photography. The entry on auras says: "Kirlian photographs are perhaps the most convincing evidence to date; yet most scientists suggest that these photographs . . . are merely reflections or depictions of the electromagnetic energy emitted from all living things." *The Kirlian photography entry does* little to clarify, and both ignore the sound debunking Kirlian photography has received over the years. This is indicative of the way other entries are done, with "possible" paranormal and scientific explanations given.

Even when there is something of a conclusion, the rest of the entry may contain little explanation. The entry for astrology notes, "In a world in which modern science and technology so dominate our lives, it may seem surprising that astrology still commands such widespread belief." But the rest of the entry explains the ideas of astrology rather than why this statement is true. Similarly, the entry on dowsing could have explained how it has been debunked, but instead just includes statements like, "Skeptics suggest that dowsers who do find water, oil, or treasure have merely been lucky."

There are so many other entries with faults, omissions, blatant favoritism towards the paranormal, etc., that it would take another encyclopedia just to list them all. But skeptics can at least take heart that the Cottingley Fairies are definitively stated to be a hoax.

Not all of the entries are blatantly biased. Some reference skeptical writings and include proper scientific explanations. But it's not enough to appear scientific and unbiased some of the time, with selected topics, as it suits the individual writer. Encyclopedias need to contain material that is both correct and objective. Unfortunately, this tome fails on both counts.

Are the Odds for ETI Worse Than We Thought?

MARK WOLVERTON

Rare Earth: Why Complex Life is Uncommon in the Universe. By Peter D. Ward and Donald Brownlee. Copernicus, New York, 1999. ISBN 0-387-98701-0. 333 pp. Hardcover, $27.50.

It's all the fault of Copernicus, Galileo, and Darwin. Once they proved that we humans aren't the center of the cosmos, they made it possible for the idea of extraterrestrial intelligence to become an article of popcultural faith. The argument usually boils down to a probability game: the basic elements of life are common in the universe and easily form organic molecules, and with so many stars and so many galaxies, the odds in favor of ET life seem overwhelming. And not just life: *intelligent life.* It *couldn't* be just us in all that vastness, could it? Of course not. The idea is beneath consideration.

But geologist Peter Ward and astronomer Donald Brownlee *do* consider it in their book *Rare Earth*, raising a host of troubling questions that even the most zealous ETI proponent will find difficult to ignore. After forty years of intermittent SETI searches with nary a peep from the cosmos, coupled with paradigm-shattering discoveries in evolutionary biology and geology, the scientific consensus is changing. It *is* a game of chance—but the odds for ETI are worse than we think.

It's not an easy idea to accept. More examples of "extremophiles," organisms existing under the most seemingly hostile conditions, turn up in the journals every year. If life can exist and thrive in frozen Antarctic lakes, deep-ocean volcanic vents, even inside nuclear reactors, why can't it exist on other planets?

The reason, as Brownlee and Ward explain, is that there's a huge difference between *simple* life and *complex* life. The gulf between the simplest self-replicating organic molecules that could be called alive, and the immense complexity of metazoans (i.e., multicellular animals) is vast. It's this gulf that forms the basis of the "Rare Earth Hypothesis": "the paradox that life may be nearly everywhere but complex life almost nowhere." By tracing the best (and so far, only) example we have—the evolution of life on Earth—Brownlee and Ward show that the path from simplicity to complexity is not a straight line, not an inevitable journey, and fraught with so many dangers and dead ends that it's a marvel that human beings exist to wonder at the process.

Rare Earth lays out a series of factors that appear to be crucial to the development of complex life. Some have been known for years, such as the necessity of a planet being the right distance from its sun (like Goldilocks's soup, not too hot and not too cold), a stable planetary environment, and the absence of any threatening nearby astronomical phenomena to scald the planet with radiation. Others, however, have only been recently recognized. The spectacular 1994 impact of Comet Shoemaker-Levy-9 with Jupiter made abundantly clear the role that Jupiter plays in protecting us from cosmic catastrophe: the planet acts as an gravitational vacuum cleaner, sucking up incoming debris and preventing it from reaching the inner Solar System. Without Jupiter, life on Earth might have been obliterated long before ever gaining a secure foothold.

Some factors are more local in scope.

Mark Wolverton has published short stories in a number of science fiction magazines and also has recently completed a science writing fellowship at NASA Ames Research Center.

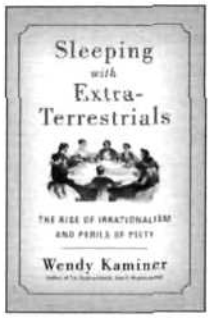
The presence of a large moon helps to stabilize Earth's axial tilt and slow its rotation, keeping climatic variations in check. Geology is also a crucial consideration. One of *Rare Earth*'s most fascinating ideas is the importance that plate tectonics might have played in the evolution of animals. By creating mountains, deserts, lakes, and all the other myriad varieties of microenvironments on Earth, plate tectonics encouraged the process of speciation—the development of different types of organisms capable of surviving in a greater range of conditions. The advantage? More chance of at least *some* form of complex life surviving later planetary catastrophes. It's already happened. The dinosaurs weren't able to survive the conditions after the impact event that occurred sixty millions years ago—but if the small mammalian creatures arising at that time hadn't been able to adapt, we wouldn't be here today. The heat and movement of the planetary core that drive plate tectonics also create Earth's magnetic field, shielding its surface from lethal radiation.

What are the chances of all the necessary factors coming together to allow the emergence of complex organisms? Not good, unfortunately. As far as we know, it's only happened once. And planetary catastrophes capable of wiping out life happen fairly frequently (in a geological sense at least). Brownlee and Ward describe ten separate mass extinction events that have been recorded on Earth, and many more may have occurred. Each time, some remnant of life has been able to hang on and keep the story going, but there are no guarantees. The continued existence and evolution of complex life is a fine and delicate daisy chain, capable of being broken at any point, and the longer it goes on, the greater the odds against it become.

Frankly, for those of us who have dreamed of great interstellar civilizations and encounters with other intelligences, it's all pretty depressing. But *Rare Earth* isn't trying to maliciously spoil our party. It's just trying to bring our expectations more in line with what increasingly seems to be the way things are. Brownlee and Ward argue that simple life may be even more common in the universe than is currently believed. But a galaxy brimming with intelligent life is very unlikely. They may be out there, somewhere; if not in this galaxy, perhaps others. If Brownlee and Ward are right, however, we will probably never be able to meet them or communicate with them.

Yet there may be a sort of inadvertent benefit. Humanity may be more special than it seems. As Brownlee and Ward put it: "We are not the center of the universe, and we never will be. But we are not so ordinary as Western science has made us out to be for two millennia. Our global inferiority complex may be unwarranted."

I still hope they're out there somewhere, and I still run "SETI@home" on my computer, and I still get excited whenever there's talk of life on Mars or Titan. But if we really are alone, maybe it won't be so bad if that realization helps us to truly value and cherish our own precious existence in the universe.



A Jarring Look at Unsubstantiated Beliefs

JIM SULLIVAN

Sleeping with Extra-Terrestrials: The Rise of Irrationalism and Perils of Piety. By Wendy Kaminer, Pantheon Books, 1999. 279 pp., $24.

Says the author, "Belief in God need not lead to belief in the Easter Bunny (although an atheist would find no difference between the two). But religions may engender habits of belief that affect the way people function politically. It's worth nothing that the loonier conspiracy theories that circulated in the 1990s combined mistrust of government with belief in the supernatural. Consider accusations that the government has been covering up evidence of extraterrestrial visitations. . . ."

Religion isn't the only subject covered in this book. Kaminer talks about spiritualism, the New Age, false memories of sexual abuse and Satanic rituals, 12-step recovery programs, pop psychology books and gurus, junk science, astrology, positive thinkers like Norman Vincent Peale, oddball therapies, cyberspace beliefs, and much more.

Though her avowed reason for writing the book wasn't to excoriate these various beliefs, that's the net result.

Herself an admitted believer in homeopathy—"a method of treating disease by minute doses of drugs that in a healthy person would produce symptoms similar to those of the disease"—she admits that such beliefs are hard to resist.

Kaminer was raised in an atheistic home. It's no surprise, then, that she became an avowed agnostic. She discusses the high rate of superstitious beliefs in this country, and points out that the U.S. has the highest percentage of believers in a divine God.

Worthwhile and informative, the book is also slightly jarring, what with Kaminer exposing so many (often surprising) unsubstantiated beliefs held by many folks. The only drawback to this book is its title. Though a humorous, perhaps ribald, jab at UFO and alien invasion believers, it detracts from the more serious underpinnings of the book. I was put off from reading it when it first came out because of the seemingly flippant title. Just the chapter called "Cyberspacy" is worth it.

Kaminer has written five other books, including *I'm Dysfunctional, You're Dysfunctional.* A Fellow at Radcliffe College, she has contributed articles to *The New York Times, Atlantic Monthly,* and *The Nation.* □

James Sullivan writes from South Bend, Indiana.

NEW BOOKS

Listing does not preclude future review.

400 Years of Imaginary Friends: A Journey Into the World of Adepts, Masters, Ascended Masters, and Their Messengers. Kenneth & Talita Paolini. Paolini International, LLC, 52 Cascade Lane, Livingston, MT 59047. 2000. ISBN 0-9666213-0-1. 411 pp. Softcover. $26.95. Foreword by Joe Szimhart. How and why do people join such extreme cult groups as those identified with Waco, Heaven's Gate, and Jonestown? Thirteen years ago the authors joined the controversial Church Universal and Triumphant, led by Elizabeth Clare Prophet—self-proclaimed messenger to "Ascended Masters." The group owns the largest set of privately owned bomb shelters in the United States. The authors take the reader inside the group and explain how intelligent people give up their individuality to spiritual leaders who direct every aspect of their lives. The book is a record of myths, scams, greed, devotion, and the will-to-believe-it's-true attitude of devotees.

The Ecological Indian: Myth and History. Shepard Krech III. W.W. Norton & Co., Inc., 500 Fifth Ave., New York, NY 10110. 1999. ISBN 0-393-32100-2. Softcover. $14.95. How truthful is the image of the Native American living in perfect harmony with nature? A professor of anthropology at Brown University critically examines the noble image of the North American Indian as ecologist and conservationist. By revisiting and newly analyzing some of the most important and roundly argued cases pertaining to conservation and ecology in native North America, beginning with the Pleistocene extinctions, Krech says he hopes to "rekindle debate on the fit between one of the most durable images of the American Indian and American Indian behavior."

The Extraterrestrial Encyclopedia: An Alphabetical Reference To All Life in the Universe. David Darling, Ph.D. Three Rivers Press, New York, NY. 2000. ISBN 0-8129-3248-X. 513 pp. Softcover. $21.95. Excellent, scientifically responsible, up-to-date, reader-friendly reference work by a Ph.D. astrophysicist and writer about all aspects of our quest for extraterrestrial life, from ancient speculations to results of the latest interplanetary probes. Roughly 1,900 entries, including 300 biographical profiles. Intended for laypersons, students, and academics, it has a comprehensive system of cross-references, designed to allow readers to trace the development and interaction of key themes in the debate about life "out there." The entries involving such subtopics as UFOs, the Roswell incident, and Erich von Däniken are well informed and skeptical. The book adds a 634-item reference section and nine pages of Web site listings.

Lives of the Psychics: The Shared World of Science & Mysticism. Fred M. Frohock. The University of Chicago Press, 5801 S. Ellis Ave., Chicago, IL 60637. 2000. ISBN 0-226-26586-2. 281 pp. Hardcover. $27.50. How should we regard claims about supernatural experiences? A professor of political science at Syracuse University provides a personal/scholarly attempt "to introduce and evaluate a set of disparate arguments on the supernatural and to enliven these arguments with events that may or may not have happened in the way that they are described by those on either side of the divide over experiences beyond the conventional boundaries of nature." The materials he presents include multiple theories, a variety of narratives, interview data, history, critical anecdotes—"generally whatever is necessary to illuminate any set of interesting claims on the supernatural." The organizing frame for the book is the opposition between skeptic and believer. The author would appear to be a bit of both.

The Mysteries Within: A Surgeon Reflects on Medical Myths. Sherwin B. Nuland. Simon & Schuster, Rockefeller Center, 1230 Avenue of the Americas, New York, NY 10020. 2000. ISBN 0-684-85486-4. 286 pp. Hardcover. $24. A veteran surgeon whose book *How We Die* won a National Book Award takes us inside our own bodies to show how we continue to cling to myth and superstition even as our knowledge of our most hidden inner organs increases. Although we think of ourselves as living in a scientific age, we have inherited folktales and illusions about the heart, stomach, liver, spleen, and uterus, and we are often comforted by what they tell us about ourselves, even when the legends are inaccurate. Nuland shows how our current knowledge of our organs has emerged from a rich history of imaginative speculation.

Psychology: Sixth Edition. David G. Myers. Worth Publishers, 41 Madison Ave., New York, NY 10010. 2001. ISBN 1-57259-791-7. 689 pp. Hardcover. A welcome sixth edition of introductory textbook that aims, in the author's words, "to merge rigorous science with a broad human perspective in a book that engages both mind and heart." The first two stated goals of the sixth edition are to exemplify the process of inquiry and to teach critical thinking. The very first chapter is devoted to "Thinking Critically with Psychological Science," and throughout the book the narrative is brightened with sidebars about skeptical investigations into popular topics (e.g., firewalking, left brain/right brain, "alternative medicine: new ways to heal or old snake oil?" and "how to be a 'successful' astrologer or palm reader"). One section considers "Is there extrasensory perception?"

—Kendrick Frazier

ARTICLES OF NOTE

"Alternative Views on Alternative Medicine." *Science*, 289:245–246, July 14, 2000 (Letters). A selection of views on alternative medicine—letters by Lewis Mehl-Madrona, Michael Katz, E. Patrick Curry, and Luis Benitez Bribiesca. (Mehl-Maldrona is the alternative medicine practitioner who was the subject of the lead News & Comment article in the July/August SKEPTICAL INQUIRER.) The letters are in response to two Science Focus articles in the June 2 *Science*: "Stephen Straus's Impossible Job," about the new head of alternative medicine at NIH, and "Bastions of Tradition Adapt to Alternative Medicine," about the entrance of alternative medicine into medical school curricula and concerns over that.

"Educators Have Hard Choices; Nationally, Not Just in Kansas." *Science*, 289:869–871, Aug. 11, 2000 (Letters). A sampling of highlights of responses to Eugenie Scott's Science and Society essay in the May 5 *Science*, "Not (Just) in Kansas Anymore," on concerns about evolution and creationism in science education (Articles of Note, July/August). Scott then responds. She counters what she calls the "big three" antievolution arguments students pick up (voiced by several of the respondents) and says scientists and science teachers need to teach more evolution and teach it better, and keep "nonscientific ideas" such as creationism and intelligent design out of science classes.

Murray, David. "The Code Cracks." *Wall Street Journal*, June 9, 2000. In the 1997 best-seller *The Bible Code*, Michael Drosnin argued that hidden messages were embedded within the Bible. Murray, head of the Statistical Assessment Services in Washington, says it isn't so. He feels that the lingering impression that a code may, in fact, be buried in the Bible for a computer to discover is badly misguided. He points out three distinct flaws the code has: the "wiggle room for reading the text," the "computer's sleepless sifting provides millions of opportunities and settles for 'close relationships,'" and the fact that "the pattern-finding was tuned to the text, which has regularities that skew the probabilities."

Rensberger, Boyce. "The Nature of Evidence." *Science*, 289:61, July 7, 2000. Rensberger says the American public is extremely interested in science but simply doesn't understand it. He says this is why pseudoscience has become so popular among the general public. "Without a grasp of scientific ways of thinking, the average person can't tell the difference between science based on real data and something that resembles science but is based on uncontrolled experiments, anecdotal evidence, and passionate assertions." He lists suggestions on teaching the public these differences.

Mysteries of History. *U.S. News & World Report*, July 24–31, 2000. In an entire issue devoted to the mysteries of history, *U.S. News* covers everything from the disappearances of Amelia Earhart and Davy Crockett, to Atlantis and the Sphinx. It covers the ancient riddles of Stonehenge and the Shroud of Turin to the missing pieces of Beethoven's *Immortal Beloved* and the map of lost treasures.

—Jodi Chapman and Kendrick Frazier

SCIENCE BEST SELLERS

Top Ten Best Sellers in **New York**

1 ***The Elegant Universe: Superstrings, Hidden Dimensions, and the Quest for the Ultimate Theory***
Brian Greene
Vintage

2 ***The Code Book: The Evolution of Secrecy from Ancient Egypt to Quantum Cryptography***
Simon Singh
Anchor Books

3 ***Genome: The Autobiography of a Species in 23 Chapters***
Matt Ridley
Harpercollins

4 ***Voodoo Science: The Road from Foolishness to Fraud***
Robert L. Park
Oxford University Press

5 ***Driving Mr. Albert: A Trip Across America with Einstein's Brain***
Michael Paterniti
Dial Press

6 ***The Design of Everyday Things***
Donald A. Norman
Currency/Doubleday

7 ***The Visual Display of Quantitative Information***
Edward R. Tufte
Graphics Press

8 ***Longitude: The True Story of a Lone Genius Who Solved the Greatest Scientific Problem of His Time***
Dava Sobel
Penguin USA

9 ***Visual Explanations: Images and Quantities, Evidence and Narrative***
Edward R. Tufte
Graphics Press

10 ***Godel, Escher, Bach: An Eternal Golden Braid***
Douglas R. Hofstadter
Basic Books

By arrangement with Amazon.com, September 2000.

Knowledge, Certainty, and the Principle of Tolerance

RALPH ESTLING

I used to have a penpal with whom I argued about many things. One of them was the Holocaust. He was not a Holocaust denier; he merely maintained that the whole thing was grossly exaggerated. Probably, he wrote (and I could detect no self-awareness of insanity, nor discern the slightest hint of irony), no more than half the number of deaths reported had actually occurred. The rest were Zionist propaganda or assumption. He was certain of this, sure of his facts. I wrote back, admitting that I couldn't quite decide at first whether his claim was more laughable than it was horrible, as if the organized mass extermination of three million men, women, and children, meticulously planned and methodically performed, down to the careful compilation and filing of the data by the executioners' clerks and secretaries, would be only half as monstrous as the murder of six million, as the arithmetical logic, with its impeccable numerical precision, would seem to dictate. I concluded in my letter that, as I didn't wish to go mad contemplating this sort of precision, I had decided, in a fit of self-preservation, that his argument was more laughable than horrible and would not debate the matter further. Our correspondence ceased soon after.

He was (and for all I know still is) absolutely certain he was right, that is, that his figures were correct. He was undeniably of a careful, scientific frame of mind. He knew far more about particle physics than I, and, he said (and I had no cause to disbelieve him), done some research into the Holocaust, and therefore had knowledge of what he was talking about. Whereas I, who had not carried out any documentary research into the question, was in no position to argue against his assertion, based as it was on hard facts.

J. Bronowski at Auschwitz, from *The Ascent of Man.*

Did he have a valid point? He most certainly did.

I'm a great respecter of any kind of research, scientific, historical, or literary, though locked as I am in deepest Somerset in the blighted heaths of darkest England, I do not engage in original research very much. Most of what I think I have gathered from reading, but I've only rarely gone to the source material, the initial wellspring and fountainhead, the original article. To those who regularly glance over my essays this may come as not quite the stunning shock I would prefer it to be. But there you are. Here I stand. God knows I could do a great deal more.

The question is this: Do we research the written record to gain knowledge, or to cement conviction? *Do we accept continued* murky doubt, or only the bright flame of certainty? For we shall never gain certainty in science through doing documentary research, even into original source materials, except the trivial sort,

Our occasional essayist Ralph Estling writes from Ilminster, Somerset, England.

that Professor X did (or didn't) really profess Proposition Y in the form in which it has come down to us. Scientific research may yield us evidence that can be immensely useful in a limited, temporary way, but it will never be conclusive, never final enough to prove beyond doubt that a vital truth is this and not that, only what Professor X thought was the truth at the time, or, more likely (if Professor X was a good scientist), where a portion of what could be true might, possibly, be inclined to lead. For a real scientist, the acquisition of knowledge is an endlessly ongoing thing that often erases its previous state or amends it, sometimes beyond recognition.

For those interested in certainty, on the other hand, science and scientific research is not the way. Of course, there is bogus science and bogus research and these will lead us to certainty, in whichever direction we have already decided to go. Certainty leads to the end of thinking. It is also abundantly clear that, while nonsense can be promulgated in a few seconds or paragraphs, accurate and detailed information and explanation of the facts takes much longer. That's why fanatics and charlatans do so much better than rational people during television debates. But when sufficient time and space are allowed to the expounder of reason, then elements of truth (always partial, always provisional) may emerge.

Near the end of his wonderful book and television series, *The Ascent of Man*, Jacob Bronowski has a section entitled "Knowledge and Certainty." In it he draws a careful distinction between the two while discussing Heisenberg's Principle of Uncertainty, which Bronowski prefers to call the "Principle of Tolerance." That is, a form of reasoning that allows a degree of latitude, a margin of error, to creep in, a lack of absolute conviction that one has succeeded in locating and now possesses all the facts, which, in Bronowski's words, is the principle of monstrous certainty. Part of this section of the book and television program is set in Auschwitz, where some of his relations (and if we stop to think about it, some of your relations and some of mine and some of every human being's relations) were gassed to death and their bodies burned, about four million all told, Bronowski states. In both the television version and the book he is shown squatting down in a small, murky pool in a field just outside the barbed wire perimeter, dipping his hand into the dark, muddy, marshy water, and pulling out a tuft of weeds and saying, "We have to touch people." This happens a second or two after he tells us that the ashes of the burned corpses were flushed out of the camp's crematorium and into this field, forming this little pond amid the grass.

He tells us that the killing was not done by gas. "It was done by arrogance. It was done by dogma. It was done by ignorance. When people believe that they have absolute knowledge, with no test in reality, this is how they behave. This is what men do when they aspire to the knowledge of gods."

I fervently hope he had done his documentary research. I would hate to think that a mere two million human beings were gassed and burned here, before their ashes were flushed into the weeds.

On Inventing Your Own Disorder

BOBBY NEWMAN

It was one of those moments in life that has the potential to be fairly embarrassing. I was in the middle of a talk to a parent's group, describing applied behavior analytic (ABA) teaching for children with autism and showing some video of myself doing ABA with a child with autism. It was a fine time to do so, as New York State had just recently released a task force report advocating ABA as the only teaching strategy for children with autism.

I've been practicing and teaching ABA for about fifteen years now, although we weren't the most popular care providers on the block until about seven or eight years ago. It took the publication of a fine book by a mother of a child with autism, Catherine Maurice's *Let Me Hear Your Voice*, to change that image of us as the mad scientists who taught children in the same way you would train a rat.

Now, it seems that everybody wants ABA for their children. In fact, the demand has so far outstripped supply that a whole generation of untrained "behavior analysts" or "Lovaas therapists" has been created. Many states have begun certifying behavior analysts so that parents and other consumers will have a means of determining who is appropriately trained in ABA and who is not. A national certification came on line in May of 2000. I was outlining all these issues for the parents while describing the techniques I was demon-

Bobby Newman, a licensed psychologist and certified behavior analyst, is director of training and resources with the Association in Manhattan for Autistic Children, 25 West 117 Street, New York, NY 10011, and an adjunct professor of psychology at Queens College, CUNY.

strating on video. My moment of awkwardness came when a person in the audience raised her hand and said "Dr. Newman, the work you're showing us is really fantastic. But can't you see that the child on tape isn't autistic? He has Sensory Integration Disorder!"

Now I'm in trouble. I've been teaching developmental disabilities on the college level for ten years. I've been directing programs for people with autistic-spectrum disorders for at least that long. This person just asked me about a developmental disorder I've never heard of before. I did the best thing I could in the circumstance, considering that there were about 100 people in the audience and I didn't want to get into trouble by bluffing.

"Forgive my ignorance, but I've don't know what Sensory Integration Disorder is." I figured I could at least get points for humility and politeness. The answer I got showed me that it was a wasted effort.

"Well, it's not in any books. But we know it exists. Occupational Therapists are just now describing it."

"Ah. Right."

I found myself suddenly turning British: "Right." That was all I could think to say without getting really nasty. Don't try to embarrass me at a public talk with your made-up diagnostic category.

I continued on with the talk, which went really well. Later, I was able to piece together what had happened. It was a brilliant piece of pseudoscience that would have made the most hardened cynic proud. New York had just come down with a task force report that stated in no uncertain terms that the type of treatment you provide, sensory integration, has no documented empirical evidence for children with autism. To this, you reply "Fine, then I don't work with the autistic anymore. All those kids that they think have autism actually have Sensory Integrative Disorder, and my treatment is valid for them."

If it wasn't for the fact that a bunch of people who desperately need help are being hurt with this game, it would actually be funny, or at least you could respect the sheer gall being shown. The clear message being sent out is that actual empirical research doesn't matter. The therapists who subscribe to Sensory Integrative (SI) therapy simply *believe* in it. They are going to provide that treatment, regardless of the fact that they can show no empirical effectiveness for the treatment.

This anti-empirical stance in treatment has provided us with countless examples of blind alleys or even downright destructive treatments. Injections of secretin, facilitated communication, holding therapy, and countless others continue to exist and to provide false hope to parents and professionals, all the while encouraging people to ignore what we know is effective.

I wish I could just invent my own disorder and begin providing treatment. As a matter of fact, I think I will. My disorder is called "Imaginary Bulk Syndrome." You can call it I.B.S. for short. This is a disorder mostly seen in gyms and health clubs. It is observed in individuals who walk around with their arms flared out at the sides as though they had massive development in their Lat regions. Any time you can see a large gap between someone's arms and their sides, any time they walk around looking as though they're ready for someone to yell "draw," you know you're looking at I.B.S. These poor people need help. Luckily, I have developed Imaginary Bulk Integration treatment, so there will be hope for these unfortunates. Hey, who needs empirical evidence? □

FOLLOW-UP

In our May/June 1999 issue we published a Follow-up column by anthropologist Derek Freeman titled "On the Ethics of Skeptical Inquiry." Freeman submitted it in critical response to two articles published under the collective heading "The Mead-Freeman Controversy: A Fresh Look" in our November/December 1998 issue. The authors of those two articles, James Côté and Paul Shankman, also provided brief responses to Freeman published in the same issue in which his appeared. The March/April 1999 and May/June 1999 issues included a variety of letters to the editor commenting on the controversy. Here now Freeman provides another take on one of the fundamental contentions of the controversy. Côté and Shankman then briefly respond.—EDITOR

Margaret Mead's *Coming of Age in Samoa* and Boasian Culturalism: A Brief Report

DEREK FREEMAN

I write to inform you of the recent discovery of fundamentally important new historical evidence about the anthropological fieldwork that Margaret Mead carried out in American Samoa in 1926.

This crucially important evidence is contained in a little-known book entitled *All True! The Record of Actual Adventures That Have Happened To Ten Women of Today* that was published in New York in 1931 by Brewer, Warren, and Putnam. The "adventure" by "Dr. Margaret Mead" (pp. 94–118) is entitled "Life as a Samoan Girl." It begins with a reference to "the group of reverend scientists" who in 1925 sent her to study (Mead 1925) "the problem of which phenomena of adolescence are culturally and which physiologically determined" among the adolescent girls of Samoa, with "no very clear idea" of how she was "to do this." It ends with an account of her journey to the islands of Ofu and Olosega in March of 1926 with the "two Samoan girls," as she calls them, Fa'apua'a and Fofoa. In fact, Fa'apua'a and Fofoa were both twenty-four years of age and slightly older than Mead herself. Mead continues her account of her visit to the islands with Fa'apua'a and Fofoa by stating: "In all things I had behaved as a Samoan, for only so, only by losing my identity, as far as possible, had I been able to become acquainted with the Samoan girls, receive their whispered confidences, and learn at the same time the answer to the scientists' questions."

This account, *by Mead herself*, is fully confirmed by the sworn testimony of Fa'apua'a (cf. Freeman, 1998, Chapter 11). It can be found on page 141 of the second and paperback edition (1999) of *The Fateful Hoaxing of Margaret Mead*. It is definitive historical evidence that establishes that Martin Orans was in outright error in asserting (1996, 92) that it is "demonstrably false that Mead was taken in by Fa'apua'a and Fofoa." It is also evidence that establishes that *Coming of Age in Samoa*, far from being a "scientific classic" (as Mead herself supposed) is, in certain vitally significant respects (as in its dream-like second chapter), a work of anthropological fiction.

In 1928, in Chapter 13 of *Coming of Age in Samoa*, Mead concluded, unreservedly, that the phenomena of adolescence are due not to physiology but to the "social environment." This extreme environmentalist conclusion was very much to the liking of Franz Boas, "the father of American anthropology," who was both the sponsor and the supervisor of Mead's Samoan researches. In 1934, in the *Encyclopedia of the Social Sciences* (13:34) Boas asserted that "the genetic elements which may determine personality" are "altogether irrelevant as compared with the powerful influence of the cultural environment." This is a succinct statement of the Boasian culturalism that "from the late 1920s" became, in the words of George Stocking (1973, 86) "fundamental to all American social science."

In Samoa, Mead had acted as Boas's agent and, having been given Boas's enthusiastic commendation, *Coming of Age in Samoa* became one of the most influential texts of the twentieth century. We now know from detailed historical research that the extreme environmentalist conclusion to which Dr. Mead came in *Coming of Age in Samoa* is based on evidence that is quite unacceptable scientifically. Furthermore, in the light of present day knowledge (cf. Ridley 1999), this also applies to Boasian culturalism, which at the beginning of the twenty-first century has become a scientifically unacceptable belief system.

This liberating change in the *zeitgeist* of the late twentieth and early twenty-first centuries is evident in the fact that the Intercollegiate Studies Institute of Wilmington, Delaware, in listing the fifty worst and best books of the century has judged Margaret Mead's *Coming of Age in Samoa*, with its approving foreword by Franz Boas, to be the "very worst" book of the twentieth century.

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Derek Freeman is in the Research School of Pacific and Asian Studies' Institute of Advanced Studies at The Australian National University.

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James Côté and Paul Shankman Respond

More of the Same

As promised in a previous issue (May/June 1999), I have now made available the primary sources that Derek Freeman has been selectively offering as evidence that Margaret Mead was hoaxed.

This includes excerpts from *All True*, which Freeman claims contains Mead's admission to this effect (it does not—he is continuing his practice of selective citation and misrepresentation of sources). I will not take up valuable space here to deal with the many problems with Freeman's claims. Instead, readers can consult the Web site I have created that provides the primary sources most pertinent to Mead's Samoa research: www.sscl.uwo.ca/sociology/mead/index.htm.

In addition, readers are directed to a special issue of the *Journal of Youth and Adolescence* (Fall 2000) that includes in-depth critical analyses of Freeman's claims about Mead's supposed hoaxing, her relationship with Franz Boas, and Mead's and Boas's position on cultural and biological influences on behavior. The group of scholars contributing to that journal issue are unanimous in the view that Freeman has seriously misrepresented Mead's Samoan research and its influence.

The fact that Freeman finds solace in an endorsement from the conservative Intercollegiate Studies Institute for his smearing of (the liberal) Margaret Mead speaks for itself. It is telling, though, that they did not put any of Freeman's books on their pet list of the fifty best books of the twentieth century. Mead's book was not among the best of the twentieth century, but it is clearly among the most provocative, as the continuing attention to it in the twenty-first century attests.

Professor James Côté
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Mead-Freeman: The Never-Ending Controversy

Once again Derek Freeman is arguing that Margaret Mead was "hoaxed" about Samoan sexual conduct by two young women. He believes that his recent "discovery" of an autobiographical chapter by Mead provides "direct evidence" of the alleged hoax in her own words. Yet Freeman quotes only a relevant single sentence from her chapter in an adventure book written primarily for young women. In this sentence, Mead states that she became acquainted with "the Samoan girls" and received "their whispered confidences." Freeman interprets this sentence as "definitive historical evidence" of hoaxing by taking these very general phrases and assuming that they have very particular meanings.

Freeman assumes that the phrase "their whispered confidences" refers to innocent lies about sex allegedly told to Mead by two young Samoan women, Fa'apua'a and Fofoa. However, in Mead's chapter there is no discussion of sexual conduct; "their whispered confidences" does not refer to any particular aspect of Samoan culture. Freeman also assumes that "the Samoan girls" refers exclusively to Fa'apua'a and Fofoa, but the phrase is used elsewhere in the chapter without reference to these two young women. Thus there is no "direct historical evidence" of hoaxing in the chapter.

Freeman first claimed over a decade ago that Fa'apua'a's sworn testimony showed Mead was hoaxed. Martin Orans (1996) effectively questioned this argument by noting that if Fa'apua'a, herself a ceremonial virgin (or *taupou*), had told Mead that girls "spent nights with boys," and if Mead had believed her, then Mead would have written in *Coming of Age in Samoa* that ceremonial virgins engaged in premarital sex. Instead, she wrote that the entire village protected the virginity of *taupou*. Therefore, while girls may have told Mead innocent lies, there is no evidence in Mead's writing that she believed them. Hence there is no evidence of successful hoaxing.

In his most recent book, Freeman (1999) claimed that a letter from Mead to Boas provided new "smoking gun" evidence of hoaxing. Orans (1999) demonstrated that Freeman had selectively quoted the letter, thereby misreading it. Now Freeman is offering Mead's chapter as further evidence of hoaxing, but Freeman, once again, has selectively quoted and misread the evidence.

As for the Intercollegiate Studies Institute, which deemed *Coming of Age in Samoa* the worst book of the twentieth century, this organization may, with Freeman, wish to believe that Mead's book was an intellectual disaster. The ISI is free to do so. But the Institute's use of Freeman's deeply flawed argument about hoaxing does not add to its credibility or Freeman's.

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Irresponsible Speculation and Scientism?

JOHN E. CHAPPELL JR.

Ralph Estling's attack against the Natural Philosophy Alliance (NPA) contains nothing of substance, but only very harsh insults mixed with strained literary references (SI, March/April 2000, p. 57). His belief that no one disagreeing with special relativity (SR) can possibly be right rests on nothing more than what logicians often call "the fallacy of argument from authority."

Countless others, including many censorial editors and meeting organizers, have also dismissed critics of SR with contempt, without any attempt to grapple with the arguments they make. But rarely have any of them indulged in as much irresponsible speculation about such critics, as Estling presents here.

Offering no supporting evidence at all, he calls us "pitiable," and accuses us of lacking perspective, a sense of humor, and even any willingness to learn. To the contrary, during his brief period as a member of the NPA, Estling revealed *himself* to be unwilling to learn anything new. Once he cited a few experiments he thought confirm SR, and after I replied that all of them—as well as every other claim of experimental or technological confirmation of SR—have been reinterpreted by NPA scholars in terms of more logical and rational theories, I never heard from him again.

By the way, there are several new electrodynamic experiments, some carried out by NPA members, whose results do not fit with SR by any interpretation of the data.

In working towards the reestablishment of realism and objectivity in physics, we understand well that valid science cannot result from logical contradictions, such as abound in the literature on SR. Physicists in general ignore logic, because their scientistic bias convinces them that nothing from philosophy can matter in judging what experimental data means. But logic is necessary and crucial in all types of thinking, including scientific—so much so that no data can have any meaning until it is logically interpreted, and no experiment can possibly confirm an illogical theory.

If you at SI should wish to expand your general focus on opposing any sort of nonsensical substitutes for real science, I invite you to turn your critical attention toward modern physics. I strongly suspect it has provided inspiration for many kinds of pseudoscience, whose proponents probably tend to think, "Well, what I recommend is no more irrational than relativity and quantum physics, and they're accepted."

Serious suspicions have now and then been expressed even from within the physics establishment, such as in Joseph Schwartz's book *The Creative Moment* (1992), where he suggests—as others have also—that no significant progress in theoretical physics has been made since 1931. (And what happened then, the hypothesizing of the neutrino, has come under frequent suspicion in recent years.)

Schwartz offers some very heavy criticism of quantum physics. Oddly enough, in his very next column, so does Estling, in effect *approving* of what many NPA members believe (SI, July/Aug., 2000, pp. 59-60)! Not exactly logically consistent, is he?

In this latest column, Estling's primary object of attack is religion. Practicing a very dangerous version of scientism, he attacks his own caricature of religious belief, implying that no such belief is tenable, because it is not scientifically proven. Estling fails to grasp that religion deals with vital matters well outside the scope of science, such as the difference between moral right and wrong.

Religious principles might suggest, e.g., that it is unethical to attack scholars whose ideas the attacker has made no serious effort to understand.

John E. Chappell, Jr.
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Irresponsible Speculation and Scientism? A Reply

It is entirely possible that Mr. Chappell and his associates are right and that most of nineteenth and twentieth century physics—thermodynamics, Special Relativity, general relativity, quantum mechanics, the Standard model of particle physics, and the various cosmological hypotheses about the origin, nature, and evolution of the universe—are wrong. So if Mr. Chappell wishes, he may write a paper (perhaps he already has, in which case he has saved himself much time), pointing out why modern, i.e. post-Newtonian, physicists have picked up the wrong end of the stick over and over again. I suggest he deal with one aspect of modern physics at a time, beginning perhaps with Special Relativity, which appears to interest him

the most, and when he's ready, let me know (my address is available at SKEPTICAL INQUIRER if Mr. Chappell no longer has the letters I sent to him). I'll then contact a professional physicist I know and, if he has no objection and has the time, he will contact Mr. Chappell and Mr. Chappell can then send him the paper he's written for the physicist to comment on.

If Mr. Chappell says, Ah, but I've done this sort of thing before and the physicists only tell me I'm wrong, or don't write back at all, I can only assure him as best I can that *my* physicist is a very nice physicist and will reply, offering full explanation for his comments.

If Mr. Chappell still does not wish to take up my offer, on the grounds that all professional physicists are in a conspiracy against the National Philosophy Alliance to keep the awful truth about the nature of reality from becoming generally known, I can only admit that I can do no more, and I shall slink off into the shadows.

(The reason why I didn't answer his letter telling me why Einstein got it all wrong is that I was not able to follow his line of reasoning and decided that it was best not to follow it up. Needless to say, the fault could have been entirely mine. Another reason why he should consult a competent physicist.)

Ralph Estling
Ilminster, Somerset, U.K. □

WORLDS IN COLLISION
from page 39

Do you suppose she would accept an explanation such as, "Well, the car's fine, just that the energies aren't balanced," or "The stars just aren't right—try it again when Mars is out of Leo"?

More likely, the psychic or astrologer would demand a concrete, real-world, mechanistic explanation for why her car won't work, such as that the spark plugs are shot or the alternator isn't charging. She knows that in the real world, paranormal influences are not a realistic factor. Yet the mystical energies (and "information" from those energies) by which psychics and astrologers make their livings are apparently valid enough to "sell" to *other* people through readings and consultations.

To avoid what psychologists call *cognitive dissonance*, the uneasiness of knowingly holding two contradictory and mutually exclusive beliefs, people adopt a separate frame of mind and references for different parts of their lives. In this way, for example, a lawyer who deals with logical arguments all day at work can come home, read his astrological chart and call his "psychic friend." To him, the vastly different standards of evidence he uses at work and home don't contradict each other, because work and personal life are two separate spheres.

ESP and the Law

When the paranormal and real worlds collide, the sparks can frequently be seen most brightly in the judicial system. The polar opposites of the two worlds make the clashes all the more stark. In the courtroom evidence is key; in the séance room evidence is sparse and subjugated to emotional testimonials.

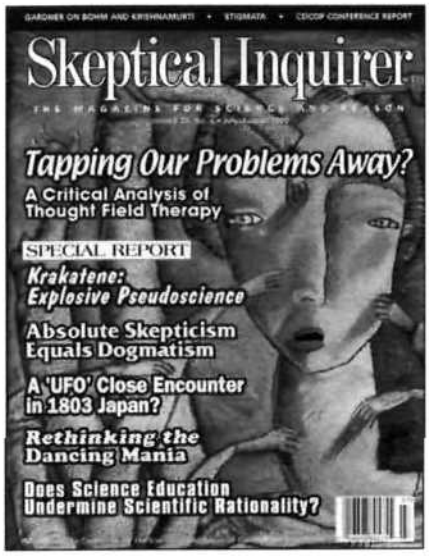
On the whole, the paranormal hasn't fared well in the courtroom (though pseudoscience has made inroads, such as the false memory hysteria of the 1980s, with its falsely-convicted day-care workers and shattered lives). In an infamous 1986 case, Judith Haimes, a proclaimed psychic, sued her doctor and a hospital, alleging that she suffered an allergic reaction from a dye used in a 1976 CAT scan and lost her psychic powers. A jury awarded her $986,000; the judge later set aside the award and the case lingered until February 1991, when it was finally dismissed on appeal.

Despite repeated claims that psychics routinely help police solve crimes, the fact is that whatever accuracy they may appear to have is attributable to such factors as simple guessing, retrofitting (making many general predictions, and, when the crime is solved, pointing out the small minority that were correct or could be interpreted as having been correct), or simply gleaning information from news reports and police officers. Psychics frequently waste valuable police time and resources investigating dead ends and accusing innocent suspects.

The courts, with their emphasis on rationality and logic, don't put much stock in psychic claims, and why should they? If they take a dim view of defendants who claim to hear voices in their heads (e.g., "Son of Sam" David Berkowitz), why would it be any different for those claiming to see visions or read other people's minds? Who would want to have aura readers, fortunetellers, and psychics assuring judges and juries that their "feelings" and "visions" say that a defendant is guilty? America already went through several periods of witch hunts; surely we need no more.

Perhaps police and psychics come in contact with each other most frequently when the former are arresting the latter for fraud. Courts can and do prosecute such scam artists, and hundreds of fortunetellers and psychics have been arrested on fraud charges, usually after bilking clients out of tens (or even hundreds) of thousands of dollars.

Some people find the paranormal enticing and reassuring, with its promises of hidden powers and mystical energies. But psychic powers, if they were real, would raise serious ethical questions regarding individuality, privacy, freedom, and free will. The fact that we do have individuality and privacy strongly implies that the paranormal realm doesn't exist. For my part, I'm happier with free will and without psychics being able to know my thoughts and future. The further apart the worlds remain the better off we all are. □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Tapping Our Problems Away?
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Absolute Skepticism Equals Dogmatism
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Does Science Education Undermine Scientific Rationality?

A Critical Analysis of Thought Field Therapy

My therapy, TFT, has been previously criticized in the *Skeptic*. I have responded to that critique and it will be seen that some of the mistakes of Herbert and Gaudiano (SI, July/August 2000) are covered in my response to that earlier article. Please see especially, e.g., the gross error of interpretation of all three critics (writing in *Skeptic* and SKEPTICAL INQUIRER) of my concept of psychological reversal (PR) who wrongly believe PR is an excuse for failure. Briefly, PR is not an excuse for failure but rather a very powerful means to significantly increase success rate. This simple and crucial fact can easily be replicated by anyone.

Therapists who follow my procedures (Callahan Techniques®) are aware that we have not used affirmations (referred to as cognitive) for a number of years. I have found such cognitive devices to be completely unnecessary and misleading; they were an unfortunate hangover from my former cognitive therapy days.

I would recommend that Professor Herbert and his student Brandon A. Gaudiano carefully read the SI article that follows theirs by Professor Mario Bunge, "Absolute Skepticism Equals Dogmatism." I will explain why.

An unusual feature of my psychotherapy that is unprecedented is that an honest skeptic can easily replicate my experiments (therapy) by following a few simple directions which describe my therapy algorithms or "recipes." It is correct that training in my procedures will increase success rate, but it is not necessary to take my training to give a general test of my claims. All that is needed is to follow the simple step-by-step directions I provide. It only takes a matter of minutes to do and the therapy results are usually immediate.

My algorithms are quite simple. Using my algorithms, grandmothers cure young grandchildren, children cure other children, lay people are curing themselves, their relatives, and friends. Some psychologists, however, are curiously reluctant to try my easy step-by-step procedures.

I was recently invited to discuss my work with an e-mail list called "Scientific Clinical Psychologists." Surprisingly, not one scientist on the list was willing to test my easily testable therapy. Professor Herbert indicated on the list that his only interest in trying it would be to "disprove" my claims, but nevertheless, he was opposed to anyone even trying my procedures.

In Professor Bunge's article "Absolute Skepticism Equals Dogmatism," Bunge observes "Once a fact has been reported, someone must examine it critically and attempt to replicate it independently." Although this has been done many thousands of times throughout the world, the psychology establishment appears curiously reluctant.

I have provided the means for true scientists to independently replicate my facts. Many highly select psychologists choose not to do my very simple experiments. Does this sound somewhat like the scientists of Galileo's day who reportedly refused to look through his scope?

Roger J. Callahan, Ph.D.
Founder, Thought Field Therapy
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Brandon Gaudiano and James Herbert respond:

We stand by our assertion that such TFT concepts as "psychological reversal" (PR) and "energy toxins" are convenient attempts to explain away treatment failures. We believe that these concepts are used in an effort to reduce self-reported distress ratings by providing opportunities to retry tapping procedures, thereby increasing the demand characteristics of the therapy. For example, in a recent television appearance on a BBC/TLC show entitled "Phobias: Prisoners of Panic" (aired August 1, 2000), Callahan used a PR tapping treatment after the initial phobia "algorithm" was ineffective. When that too failed to resolve the woman's phobia and she discontinued the treatment, Callahan proposed that her T-shirt must be toxic, and suggested that she would need to remove her clothing for tapping to be effective. There is currently no solid evidence to view such concepts as anything more than post hoc attempts to explain away null effects.

Callahan states that he has been developing this therapy for over twenty years now, but has only in the past few years stopped using affirmations in his therapy. However, many TFT-trained therapists, as well as other "energy" therapists, continue to use the affirmations with tapping. For example, we recently reviewed a training video from a CT-TFT trained therapist who used affirmations in a treatment for post-traumatic stress disorder. "Energy" therapists frequently combine TFT with techniques borrowed from established therapies. This highlights the importance of testing a TFT protocol in controlled conditions in order to determine what, if any, "active ingredients" the treatment contains.

Callahan's characterization of the second author's comments in an academic Internet discussion group is simply inaccurate; we will be happy to forward a copy of Herbert's comments to any interested reader upon request. In these discussions, Callahan was repeatedly asked to provide controlled data to support his bold assertions regarding the extraordinary effects of TFT, which he failed to produce. He seemed puzzled as to why these scientifically minded psychologists were not impressed solely by anecdotes.

We agree totally with Bunge's position that skepticism is appropriate when claims are not supported by empirical evidence or are incompatible with known theory. TFT clearly meets both of these conditions because it lacks support from controlled research, and the proposed theory, including concepts such as "thought fields" and "perturbations," is at odds with our scientific understanding of the human body.

TFT cannot hedge the usual methods of clinical science, and until it is tested under controlled conditions, no amount of testimonials will suffice as evidence of the treatment's efficacy. Callahan has not produced a single controlled study to support his claims, and it is no wonder that independent researchers have been reluctant to spend time and resources investigating these claims. A treatment that is so vastly superior to any other existing method should be quite easy to verify. In the end, Galileo convinced the "skeptics" by providing scientific proof of his assertions, not simply his testimony.

I just read the article "Can We Really Tap Our Problems Away?" and thought I'd share my personal experience with this form of therapy.

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I was seeing a therapist for a period during and following a fairly painful divorce. At one point during my treatment, my therapist engaged in Thought Field Therapy, although she never mentioned it by name, nor did she explain anything about what lay behind the exercises she had me do. She simply asked me to tap my forehead, arms, and chest, roll my eyes and hum, in a specific sequence.

The exercises failed to have any effect on me, so I repeated them several times, with no success. After my session I tried it on my own, thinking maybe the tapping helped to ease muscle tension. I also surmised that the eye-rolling exercise and the humming had something to do with interrupting my mental focus—by doing something innocuous and unusual, I was momentarily forced to stop thinking about more serious, anxiety-filled elements in my life.

While the therapy never had a profound effect on me, I assumed it was at least tied to some reasonable theory. I was thus dismayed to see in your article that it is tied to the primitive "energy field" myth. It amazes me how easily people can be misled, even my Harvard-educated therapist, who should have known better.

Keep up the good work!

Mark Rogers
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If a therapist feels ineffective in the therapy session, that's the time to use numerology charts, tarot cards, astrology charts, ouija boards, or talk about past lives, alien abduction, or satanic ritual abuse, or the latest fad that hits the marketplace like Thought Field Therapy. That will fill up the hour.

Newton Joseph
Porter Ranch, California

Absolute vs. Moderate Skepticism

After reading "Absolute Skepticism Equals Dogmatism," (July/August 2000), I thought about my own beliefs. While I don't believe they belong in the "radical" column I do find myself on the defense when topics such as astrology, alien abductions, homeopathy, or belief in a supreme being are brought up. I don't believe in any of it and never will because of a complete lack of evidence. That doesn't mean I won't listen to a story or read an article about such topics, but, I will confess, I'm looking for faults while I'm studying it.

Is it right that I should decide at the outset that a story is false? I believe when you deal with such extreme beliefs it is just. How many times must, say, astrology be proven wrong before one gets sick of explaining away the whole subject? It's hard to be objective when the people you are talking to will not listen to reason.

Truthfully I don't believe many people are complete skeptics in that they disbelieve everything. I think most are like me, who, for various reasons, decide that a topic has been studied and proven false long enough that it just isn't worth the time anymore to study it further. It's a shame that people don't demand more evidence for wild claims. It's even more of a shame when people place the burden of proving something false on the skeptics. And when such studies are undertaken and come up negative, is anyone beyond the skeptic community listening?

It is in this light that I can sympathize with people who have decided that, after years of research that have come up negative, constructive inquiry is a luxury they can no longer afford.

Joseph Olszewski Jr.
Philadelphia, Pennsylvania

I am afraid Professor Mario Bunge misses the forest for the word-trees, when he postulates degrees of skepticism, from 1) "moderate" skepticism, supported by "evidence" or "well-tried theory" and 2) "absolute" skepticism, that is "to deny anything without reasons" which he says "is just a form of dogmatism."

Just the opposite. Just like in the "Big Bang," the nature of all inquiry is established in the first second: who is making a claim of truth; and who has the burden of proof?

There is only *one* skepticism, and it cannot *possibly* be dogmatic because it has *no* initial dogma, and *no* initial burden of proof.

If a truth is asserted with convincing evidence or reasons to believe it, skepticism says: "You're right."

However, for centuries "authority" spoke (often of "mysteries") and ignored countervailing evidence and disdained proof, through intimidation or worse. So "skeptics" had to "prove" negatives; and this relic/trap, where the burden of proof is placed on the skeptic, not on the claimant, survives to this very day.

John Tomasin
West New York, New Jersey

As a nonacademic I found the article "Absolute Skepticism Equals Dogmatism" puzzling and mildly annoying. Professor Bunge rails against what he calls "radical skepticism" without ever telling us who these radical skeptics are, or even giving us a single concrete example of their radically skeptical assertions. The reader could, in fact, be excused for doubting whether radical skepticism exists other than as a construct in the mind of Bunge. He does mention "Thomas S. Kuhn, Paul K. Feyerabend, and their followers" as having logically invalid and historically false notions, but seems to assume the reader's familiarity with those notions, to the degree that no further exposition of them seems to be required. Are they radical skeptics?

Nor does he justify the use of the terms "moderate" and "radical" as applied to skepticism. This terminology suggests that there is somehow a spectrum or continuum of skepticism linking the two philosophical positions, that they are somehow two different branches of the same philosophy, with the radicals presumably being "more skeptical" than the moderates. But it is by no means clear from the article that the two schools of thought described by Bunge represent different degrees of skepticism or indeed have anything in common at all.

Jeff White
Toronto, Ontario, Canada

Mario Bunge responds:

My piece on absolute skepticism has been criticized on two counts. Whereas some of my critics hold that skepticism does not come in degrees, others doubt that there have ever been any absolute skeptics. Let me respond briefly.

Skepticism, like any other philosophical school, can be moderate or radical. The moderate skeptic does not doubt everything at once but examines hypotheses, methods, or data one by one, and does so on the strength of items of knowledge that he does not doubt. For example, Einstein doubted classical mechanics but not classical electrodynamics. So much so that his special relativity alters the former but is based upon the latter. And when he criticized quantum mechanics, Einstein did not doubt that this theory (which he had contributed to build) made correct predictions: he only believed that the theory is incomplete, and he rejected its interpretation in terms of observers and measurements. So, Einstein, like nearly everyone else, was a moderate skeptic. Or, if preferred, his skepticism was of the methodological, not systematic kind.

As for the real existence of absolute skeptics, let us start by recalling such influential ancient thinkers as Pyrrho and Sextus Empiricus, and the late Renaissance Portuguese philosopher Francisco Sanches, whose book That Nothing is Known, *published in 1581, became a best-seller throughout Western Europe.*

Nowadays there are two schools of absolute (or radical) skeptics: rationalist and irrationalist. Among the former are some followers of Karl R. Popper, such as his former research assistant Professor David Miller. See Miller's paper "Being an Absolute Skeptic," Science *284: 1625–6 (1999). They claim that we can never know the truth about anything; that only falsity can be known. Do not ask them how they know this. Popper had stated that the question of the sources of knowledge is irrelevant. And don't ask them why scientists and technologists endeavor to find new truths or improve on the accuracy of old approximate truths. For more on this kind skepticism see David Stove's* Scientific Irrationalism: Origin of a Postmodern Cult *(Transaction Publishers, 2000).*

The second school of absolute skeptics is constituted by followers of Paul K. Feyerabend, of "Anything goes" fame. They are mostly sociologists of science, such as B. Barnes, H.M. Collins, K. Knorr-Cetina, B. Latour, M. Mulkay, T.J. Pinch, S. Woolgar, and other contributors to the quarterly Social Studies of Science. *They claim that scientific facts are not discovered but constructed, and moreover by scientific communities rather than individuals: they are constructivist-relativists. Some of them add that scientists are in the business of power, not truth. In short, they too deny that we can get to know anything. Do not ask them why, if facts are made up rather than discovered, about a million scientists are daily engaged in frantically checking data and hypotheses. And why scientists seldom have a share in the sources of real power, namely big business and government. By the way, some of these same people have defended astrology and parapsychology, and indicted CSICOP for denouncing these pseudosciences: see, e.g., T.J. Pinch and H.M. Collins, "Private science and public knowledge: The Committee for the Scientific Investigation of the Claims of the Paranormal and its use of the literature,"* Social Studies of Science *14: 521–546 (1984). For more on this brand of skepticism see my book* The Sociology-Philosophy Connection *(Transaction Publishers, 1999).*

In short, skepticism can be graded, and there are radical skeptics among us. And they are seriously eroding higher education, though so far only in the faculties of arts.

Science Education and Scientific Rationality

In recent years, there has been intense discussion, and occasional controversy, about how to convey an appreciation of science and its methods to the general population of nonscientists. Certainly, no clear formula has emerged. The relative roles of "textbook" versus "hands-on" learning, "historical" versus "finished product" point of view, and "technology" versus "pure science," are still up for debate. Professor Andrew Ede's perspective, which emphasizes social, political, and economic factors, as well as intellectual history (SI, July/August 2000), is a serious one and has to be taken into account. His piece, however, leaves me with some misgivings, having largely to do with ancillary but important issues that he avoids mentioning.

To call his approach the "STS model" would seem legitimate enough but for the fact that in the context of contemporary academic life, STS (Science, Technology, and Society or sometimes Science and Technology Studies) often connotes a way of "studying" science that most scientists, as well as scientifically knowledgeable philosophers and historians, consider wrongheaded and frankly hostile to science and to the very idea of scientific rationality. The reigning mood, which one could call "relativist," "postmodern," or even "politically correct," is one in which scientific truth and rational inquiry are scorned as naive chimeras. Our deepest and most fruitful scientific ideas are held to have emerged not from observation, experiment, and sound reasoning, but as encoded versions of a dominant and oppressive ideology. The idea that good science can be distinguished from bad science or pseudoscience or even rank superstition is routinely pooh-poohed. On many campuses, STS provides a platform for the most outlandish forms of academic feminism and multiculturalism. Sympathy for New Age culture also abounds.

This is not to say that no sound work is done under the catch-all rubric of STS. Ede himself provides a counterexample. But the ideal of STS that he presents has often been shoved aside by the quasi-political and deeply anti-rational dogmatism I have alluded to. Ede would better have served readers of SKEPTICAL INQUIRER by frankly acknowledging the ambiguities with which the term "STS" is laden and by making it clear that the very worthy project he advocates is diametrically opposed to the agenda of STS as it is now instituted in many universities.

Norman Levitt
Mathematics
Rutgers University
Camden, New Jersey

Professor Ede really touched a nerve. As someone whose work has something to do with science, I frankly resent having a history professor whose contact with science is the teaching of a course on the history of science advising the scientific community on the proper content of science curricula. I suspect that Professor Ede would be no less exercised if I, a chemist, set about devising curricula for his history department. *C'est trop fort.*

Without taking the space to rebut Professor Ede line by line, allow me to comment briefly on his three major points. He observes that a major purpose of laboratory work is to provide technical training and, eventually, competent scientists. I would note that any university course is designed to provide maximum benefit to majors in that field. A course in German at the freshman level is certainly not designed for art majors or, for that matter, chemistry majors who were required to take it when I was an undergrad. Next, Professor Ede criticizes science teaching as being barren of social context. But science is only a method for acquiring information about the physical world; it is the application of the information provided by science that has positive or negative impact on society. Finally, Professor Ede maintains that science education emphasizes elite behavior at the expense of the common good. In my view, it is not the science students but rather the students in other disciplines who view physics and chemistry majors as intellectuals, and the conclusion that science students must be brilliant in order to succeed is without foundation. Even medical schools have their C students.

Professor Ede seems to be upset by the fact that science curricula are intended to produce scientists capable of employment upon graduation. His "remedy" is to provide a degree in STS, wherein a student would be more socially aware, I suppose. That may be all well and good, but I suspect that if his life were on the line, he would prefer to have his medical tests conducted by a clinical chemist more solidly versed in the nut-and-bolts aspects of clinical chemistry, however mundane and traditional this may be. As one who is responsible for training scientists in

the profession, I consider university curricula in science to be already so diluted with courses in social awareness that training today's graduates consists mostly of providing the basics which they somehow missed. Please, no STS grads in my laboratory.

Jerry F. O'Donnell
Forensic Chemist
Las Cruces, New Mexico

Andrew Ede responds:

Levitt's defense of rationality is well known and I share a number of his concerns. The problem I have encountered is that students entering the university have as their major source of scientific knowledge the science courses they have taken in elementary and secondary school. For a significant portion of students the skills-oriented nature of their education leaves them ill-prepared to make sound judgments about the conceptual issues they will face in science or other academic areas. The STS model I proposed would shift the emphasis away from laboratory skills toward a study of science as a concept.

O'Donnell expresses concern that this would put untrained people in his laboratory, but I am not suggesting the abolition of professional training. Rather I would introduce STS into elementary and secondary curricula and postpone laboratory training until the college level where material and intellectual resources are significantly better than at the secondary level. Given the incredible rate of technical development in science, the lag time for introducing useful skills at the secondary level makes much of it a waste of time. STS at the college level would also relieve the draining on teaching resources that science for non-majors has absorbed and which has been in many cases counterproductive.

If supporters of science inside and outside the faculties of science fail to develop alternatives to "Rocks for Jocks" it will leave the field open to the people Levitt is concerned about. Scholarship tends to follow power and science has been one of the greatest forces in human history. Now is the time to consider supplementing skills-oriented training with broader investigations of the concepts of science. I disagree with Levitt's analysis that STS is a breeding ground for irrationality. While nature imposes limits on interpretive possibilities, you do not have to look too hard to find the practitioners of science demonstrating the full range of human foibles. For example, a chemist of my acquaintance has for decades railed against feminists at the university because they have encouraged so many women to go into science, for which he believes they are biologically unsuited. Dismissing those who study the social issues of science may do more harm than good, if only because such challenges force self-awareness of the complexity of the place of science in society.

Bohm and Krishnamurti

A comment on Martin Gardner's article "David Bohm and Jiddo Krishnamurti" (July/August 2000). As I understand it, the present problem with David Bohm's quantum potential is that a relativistic version of it has yet to be found. In fact, it may not be possible to find a relativistic version of Bohm's quantum potential. (See the May 1994 *Scientific American*, "Bohm's Alternative to Quantum Mechanics," by David Z. Albert, page 58.) For this reason David Bohm's ideas on quantum mechanics are probably incorrect. Traditional quantum field theory does not have this problem, but I agree with Gardner that the last word on quantum theory has yet to be stated. Also, in the interest of historical accuracy, Jiddu Krishnamurti (not Jiddo) never claimed celibacy or to possess the truth about everything and he never tried, nor took an entrance exam, to enter Oxford. Sloss does not claim there was an affair between Krishnamurti and Nandini, and Gardner's remarks on the claimed lies, pregnancies, and abortions are also dubious; see *Krishnamurti and the Rajagopals* by Mary Lutyens. Martin Gardner's writing is usually very good and I thank him for the information on David Bohm. It is sad that people can be so gullible as to accept theosophy, likewise for David Bohm's uncritical acceptance of Uri Geller's claims. It is also sad that David Bohm's depressions eventually broke his spirit and this might have been what killed him.

Randy Gerl
Redmond, Washington

Readers of the SKEPTICAL INQUIRER are done a great disservice by Martin Gardner's superficial and wrongheaded analysis of Krishnamurti.

A careful reading of Krishnamurti will show him to be quite unique and one of the great skeptics in the search for true knowledge. He is *not* just another phony, self-serving guru who mystifies followers by repeating vague platitudes. Granted, he is not easy to understand at first glance (but neither is Newton, Einstein, Heisenberg, etc.).

He warns his listeners against following any authority (including his own). He urges them to become aware of the filter of conditioning through which we see the world. This task is not easy. There are no methods because any method itself is a form of conditioning! A free mind sees directly and stands completely alone without the second-hand "truths" foisted on it by culture, religion, and the latest fad. One must try to become aware of the too easy security that imprisons the conditioned mind. Scientists too have often fallen into the trap of relying on the old paradigms and too quickly rejecting the new. Martin Gardner is guilty of this.

Fred Ackerman
Washington, D.C.

Neither a professed "guru" nor "mystic," Krishnamurti was a profound skeptic of the mind and influenced many thousands of thoughtful people throughout the world. How disappointing to finally see mention of this remarkable thinker in SI and find it within the context of a superficial tabloid-type sketch.

The article is so misleading that one must question Gardner's motives and preconceived notions. Of the thousands of clever ways Krishnamurti rephrased some intriguing insights, why did Gardner choose only to include some obscure, befuddled quotes in his article?

Krishnamurti admired science and technology, but his interest was psychology. To Krishnamurti, religion was the skeptical inquiry into consciousness. His key message was not that everything is interconnected and one must live in any certain way, but perhaps the more practical message that through serious self-observation one will discover (among other things) that there is no one home.

It may have surprised Mr. Gardner to discover that the king has no clothes, but for those who are more familiar with Krishnamurti, his humanness has never been in question. He stayed on message for sixty years, lived simply, had friends at many levels, and never tried to garner fame or fortune. And like Bohm and the other physicists mentioned, his all-too-human and sometimes inscrutable side never interfered with his consistent themes and challenging questions about life during his long teaching career.

Larry Boyce
Durango, Colorado

Your article on the Indian mystical philosopher Jiddu Krishnamurti was very disturbing. I was looking forward to that article because I had just read his *First and Last Freedom* and I thought it would be a positive view of him since he seemed humble and not into the paranormal or theism. But instead you attacked his personal life, and didn't present his ideas fairly. I had just finished reading his book, which has an introduction by Aldous Huxley, one my favorite authors. Admittedly Huxley does have some far-out ideas, but I thought Krishnamurti was very humble, and original in his presentation of "mystical" type ideas. . . . Far from being "vague" I thought he was the most direct philosopher I've ever read! But it was a shock to hear about his personal life, so I guess I'm thankful for the article. It made me feel better about not living up to his standards.

Jason Wimpey
jwimpey@email.msn.com

I was saddened by the harsh treatment Krishnamurti received. . . .

Many Eastern disciplines . . . are rife with metaphysical constructs, just as Western disciplines are. I have no issue with Mr. Gardner tackling these claims—in fact, I would expect no less from the SKEPTICAL INQUIRER—but a little fairness and compassion might be in order. Yes, much of Krishnamurti's work is vague, and the adulation and mysticism that surrounded him are rather useless. However, the man had an agile and inquiring mind, and he seemed to be for the most part gentle in his approach. I have read indications of his personal weaknesses. Regardless, how much does his personal life bear on his professional life? While it is hypocrisy for a philosopher or religious individual to speak of one thing and do another, it is also human nature. Let's take what's useful and work from there, discarding anything irrational along the way.

Neil Barnes
knowarete@email.msn.com

Martin Gardner replies:

I apologize only for misspelling Krishnamurti's first name. What surprised me most about the letters was that admirers of Krishnamurti read the SKEPTICAL INQUIRER. Evidently our magazine is doing more than just preaching to the choir!

Eat Those Carrots!

Denise Grady's article, "Conference Examines Efficacy, Safety of Medicinal Herbs" (July/August 2000), cites studies that have been misinterpreted by Grady and her quoted source, Dr. Leonore Arab at University of North Carolina. Dr. Arab mentions studies that appear to link beta carotene supplementation to an increased incidence of lung cancer in men who smoke. She then relates a story of a male lung cancer patient who consumes carrot juice, warning him it may not be safe. Carrot is a whole-food source of a wide spectrum of naturally occurring carotenes, including alpha-carotene. Carrots also contain as much vitamin C as two bananas, monoterpenes, polyacetylenes, dietary fibers, enzymes and countless other beneficial nutrients and phytocompounds. Carrot, or its expressed juice, is simply not the same as the synthesized and isolated beta carotene found in some dietary supplements. To suggest smokers should not consume carrot is irresponsible and may jeopardize the health of SKEPTICAL INQUIRER readers who smoke and who may be dissuaded from eating certain fresh fruits or vegetables. Does Dr. Arab also believe smokers should avoid mangoes, papayas, melons, and other beta carotene-containing produce? I challenge anyone to identify a single scientific article in a peer-reviewed scientific journal that indicates the consumption of carrot products or other carotene-rich foods promote tumor formation.

Anthony Bragalia, master herbalist
President, Protective Factors, Inc.
Boston, Massachusetts

As a consulting plant chemist with a strong interest in cell protection research, I felt compelled to refute Denise Grady's outrageous contention that carrot juice somehow puts those who smoke at greater health risk. Dr. Leonore Arab, the "expert" interviewed by Grady, is apparently unable to distinguish between a pill and a vegetable. The research she alludes to does in fact suggest smokers should not take beta-carotene supplements, but never states that smokers should avoid consuming high-carotene foods. In a population study recently completed by Harvard Medical School and Brigham and Women's Hospital (Speizer, Colditz et al., Cancer Causes Control 1999 Oct.; 10(5): 475–82) it was concluded that higher vegetable consumption, particularly of carrots, may significantly reduce the risk of lung cancer. This confirms other population studies that show that smokers who do not consume carrots show a many-fold risk of developing lung cancer (Pisani P., Berrio F et al., *Int J Epidemiol* 1986 Dec. 15(4): 463–8). A human intervention study with vegetable products reported carrot juice, as well as tomato juice and spinach juices (other carotene sources) resulted in significant decreases in endogenous levels of strand breaks in lymphocyte DNA. Oxidative base damage was significantly reduced during carrot juice administration (Pool-Zobel, BL et al., *Carcinogenesis* 1997 Sept.; 18(9) 1847–50).

Dr. Arab is well known as a fanatical partisan of the anti-supplement movement. Her vitriolic hatred of nutraceutical research must be tempered by balance and reason. Foods, or whole-food concentrates and extracts, are quite different from artificially produced, individually isolated compounds.

John Mulcahy
Cambridge, Massachusetts

David Oates, Reverse Speech, and Backward Masking

A letter from Melanie Nickel (July/August 2000, p. 65) asked whether there might be a connection between David Oates's "Reverse Speech" and the phenomenon referred to as "backmasking." The answer is that Oates has over-generalized from a few hidden backward messages purposefully placed in rock music to his assertion that *all* speech can be played backward and *true* messages can be heard.

I first saw Oates making his wild comments on the *Larry King Show* years ago when Jack Anderson was guest host. I recall that I was as amazed at Anderson's apparent gullibility as I was at the ridiculous comments made by Oates. His assertion that all our utterances also have backward meanings is pure folly.

Oates has no professional training in psychology, linguistics, phonetics, acoustics, or any other academic field that could be used legitimately to investigate the phenomenon that he calls "reverse speech."

I have shown in two publications and in a paper written with speech scientist Ray Daniloff that there are, indeed, some purposefully placed words and phrases in

a very small number of rock music recordings which, when played in reverse, sound like something else. The most famous recording containing these backward messages is Led Zeppelin's 1971 studio recording of "Stairway to Heaven." There is no doubt in my mind that Jimmy Page and Robert Plant developed this song so that it would have many recognizable words and phrases in reverse, some of them referring to Satan. This, I feel, was done in the tradition of Aleister Crowley who advocated training the mind by doing things in reverse. Page has shown an extreme interest in Crowley, having the largest collection of Crowley memorabilia and having once owned Crowley's mansion and his occult bookshop (the Equinox).

Other recording artists including the Beatles and ELO have obvious backward-recorded segments on songs. I have never felt, however, that any of these recording artists are "satanic" or that they believe that the backward recordings would have any behavioral effects on their listeners. Certainly any sort of "subliminal" influence would be impossible. "Stairway to Heaven" in my opinion was carefully worded by Page and then phrased by singer Plant as a lark. It was an attempt, a very good one in fact, to develop a song that conveys one meaning in the forward mode and an opposite meaning in the reverse, just as one can climb either up or down the proverbial "stairway to heaven."

The late recording engineer Barry Mraz told me years ago that occasionally he would hear what sounded like a word or phrase when running a tape backward, but that it was all coincidental in the case of the many recordings he engineered and produced, including those by Styx. We think we recognize words in the backward playback because our minds try to make meaning from acoustic patterns that are "speechlike." However this is a far cry from Oates's assertion that *all* forward speech means something in reverse.

Michael W. Walker
Hearing Associates
Sylvania, Ohio

Walker, M.W. 1985. Backward messages in commercially available recordings. *Journal of Popular Music and Society*, 10(1):2–13.

———. 1987. How to produce forward/backward recordings (without supernatural guidance). *Journal of Popular Music and Society*, 11(2):91–93.

Walker, M.W., and R.G. Daniloff. 1983. On the controversy surrounding backward messages in rock music. American Speech-Hearing-Language Assoc. convention, Cincinnati.

We are linguists at Monash University in Melbourne, Australia, and we believe we are the only academic linguists to have carefully examined Oates's theories. We have corresponded with Byrne and Normand (March/April, 2000) and intend to produce our own paper for SKEPTICAL INQUIRER in due course.

In the meantime, we refer readers to our article in the *Journal of Forensic Linguistics* (Volume 5, No. 2, 1998). It is our belief that Oates's theory of Reverse Speech is totally implausible and is not supported by the evidence. We repeated Oates's own experiment, and our results suggest strongly that perceptions of Reverse Speech are generated by prompting.

As we state in our article, the concept of "backward masking" was instrumental in Oates's development of the notion of Reverse Speech. The main difference is that "backward masking," where it is real, is deliberately contrived, whereas Oates claims that Reverse Speech is automatically generated by forwards speech and thought.

We are always interested in further discussion of Reverse Speech.

Mark Newbrook
and Jane Curtain
Department of Linguistics
Monash University
Melbourne, Australia

QM Successful, Verified

I was aghast at certain statements by Ralph Estling in the July/August 2000 issue. On page 60, he seems to be saying that much of the physics of the past seventy years, including quantum theory, is "more mystical and bereft of supporting evidence than anything to be found in religion" and resembles the productions of "people afflicted with Wernicke's aphasia, creating perfectly grammatical sentences with no meaning whatever."

If Estling really means what he seems to be saying, I'm surprised that you printed this passage with no rebuttal whatever! I thought you were supposed to be defending science from its detractors. If he's not aware that quantum mechanics has passed far more experimental tests, and to far greater precision, than any preceding physical theory, and that it forms the theoretical bedrock underlying all our current electronic technology, someone needs to set him straight!

Yes, of course quantum mechanics is weird, but that's just the way the world is! Our common sense is generalized from experience with classical objects, and such objects as electrons simply don't behave in accordance with classical laws. The theories about extra universes and extra dimensions are not remotely religious or mystical, they're inevitable consequences of the mathematics involved in many of the attempts to bring gravitation under the rubric of quantum mechanics, and while many physicists find them very interesting, they're not about to believe them until they've confirmed their predictions experimentally. (Our ability to do this was, of course, catastrophically set back by the disastrous cancellation of the supercollider project seven years ago, which I for one still bitterly resent. The physicists are not necessarily the ones to blame for the lack of certain essential experimental data!)

Robert Davis
Department of Mathematics
Southern Methodist University
Dallas, Texas

Zdeněk Slanina's "demolition" of Krakatene (SI July/August 2000) leads me to wonder if the name and the claim derive from the Czech writer Karel Čapek's novel *Krakatit* (1925), a science fantasy about a super-explosive.

In the same issue, Ralph Estling does wrong to equate "various quantum theories" and "the latest musing about an infinite number of universes" with mysticism. Counterintuitive though it be, quantum mechanics has been thoroughly verified and by now has countless practical applications. True, these days there are many speculative ideas on the frontiers of physics. However, their authors clearly label them as such; they are mathematically consistent with well-established principles; and, while they cannot yet be empirically tested, this should become feasible in the reasonably near future. Meanwhile, they suggest answers to some real conundrums. For example, a multiplicity of universes would do away with the anthropic principle, which in my opinion is pretty mystical.

Poul Anderson
Orinda, California

I strongly disagree with Ralph Estling's paragraph referring to the "past seventy years" of science in his article "Templeton and the AAAS" in the July/August 2000 issue.

Quantum mechanics, thought to be the most successful theory in modern physics (accurate to at least ten decimal places), has bewildered many a physicist with its wave/particle duality. The ideas of quantum mechanics are essential to today's computers, making much possible. While quantum mechanics is difficult (thought by many physicists to be impossible) to understand, it has been extremely useful. Should we throw away our computers because the quantum mechanics on which they are based is difficult to comprehend?

"Theories" in science are not "musings." Theories explain the discovered laws of nature and, always subject to peer review, are at the foundation of modern science. Perhaps Mr. Estling was referring to "hypotheses" which have yet to be validated through many necessary observations and through peer review. Many hypotheses eventually become theories.

I believe, contrary to Mr. Estling's statements, that most of the great ideas of science have been discovered during the past seventy years. Today, we know more about the universe than ever before. May the twenty-first century (beginning on December 31, 2000, at midnight) have the brilliance of this twentieth century which is soon to end.

Lorna J. Simmons
Westland, Michigan

Ralph Estling responds:

Thank you. If one reads what I actually wrote it should be clear that I was not attacking quantum mechanics, which would be a very silly thing to do, but various quantum theories (strictly speaking, hypotheses), such as the Copenhagen Interpretation and Many Worlds, which purport to explain quantum mechanics. Better men than I have pointed out that "no one understands quantum mechanics" (Richard Feynman), while Einstein, Schrödinger, Bohm, Bell, and others have dismissed many speculations on quantum mechanics, not, I repeat, because they wish to dismiss quantum mechanics but because they have no use for the speculations. Similarly, recent pronouncements regarding an infinite number of universes inhabiting infinite numbers of spatial dimensions have nothing in the way of evidence to support them. But this should not be taken to mean that I don't believe in the existence of the universe or spatial dimensions. When evidence for these infinites is forthcoming I shall be happy to review my stand. A multiplicity of universes to do away with the anthropic principle is employing decapitation as a cure for chapped lips. Yes, not all hypotheses in science are "musings." But I was writing about those that are, and not those that aren't.

Mushing Murky Boundaries

I'm surprised that Kevin Christopher did not note that Kenneth Woodward's miracle article in *Newsweek*—"What Miracles Mean," May 1, 2000—represents more than a hastily thrown-together piece based upon phone calls to 752 people ("News and Comment," July/August, page 9).

Woodward is the author of *The Book of Miracles: The Meaning of the Miracle Stories in Christianity, Judaism, Buddhism, Hinduism, Islam* (Simon and Schuster 2000). Before and after his recitation of miracle stories associated with the world's major religions, Woodward has disclaimers and then qualifies his disclaimers.

On page 22 he says that "This is not the place, nor is it my intention, to argue the existence of God, or of gods, or of miracles." However, he then continues in the next sentence to say ". . . it is the place to remind readers that the great face-off between science and religion is a relic of the nineteenth century Western culture. Today, many scientists are also people of religious faith, and some theologians are also scientists. No science, of course, can proceed in any calculation or experiment with God as a factor and still claim to be a science. Saints, on the other hand, may and often do, 'experiment with God' as Gandhi experimented with 'truth.' This presupposes a God who is neither withdrawn from His creation nor uninterested in how it turns out. Indeed, in an evolutionary world where everything is related to everything else, it is not hard to imagine a God who, in Himself, *is* relationship."

In short, Woodward—like some Christian scientists with an Evangelical bent—seems to be trying to "mush up" already murky boundaries between science and non-science. William Demski and Michael Behe are names that come to mind in this regard. Such mathematicians and scientists—along, apparently, with people like Woodward—use their academic credentials and various isolated scientific procedures in their attempts to "prepare the way for the Lord."

Brant Abrahamson
The Teachers' Press
Brookfield, Illinois

In "*Newsweek* Publishes Poll on Miracles," Kevin Christopher complains that *Newsweek*'s polling is flawed. Rather than quibble over a few percentage points—we *all* know that much of the American public is gullible—the real issue is that *Newsweek* publishes nonsense like this fairly often.

Ethan Winer
New Milford, Connecticut

Professor's Lack of Logic

Mr. Mainfort (Conference Report on the New Paranatural Paradigm July/August 2000, p.13) identifies Phillip Johnson as a "lawyer." While perhaps technically true, he has not earned his living as a lawyer for many years. We lawyers already labor under enough negative publicity. He is a professor of law, and the taxpayers of California are entitled to wonder just how good he is at his job, considering the lack of logic demonstrated in his books.

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The letters column is a forum for views on matters raised in previous issues. Letters should be no more than 225 words. Due to the volume of letters not all can be published. Address letters to Letters to the Editor, SKEPTICAL INQUIRER. Send by mail to 944 Deer Dr. NE, Albuquerque, NM 87122; by fax to 505-828-2080; or by e-mail to letters@csicop.org (include name and address).

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THE COMMITTEE FOR THE SCIENTIFIC INVESTIGATION OF CLAIMS OF THE PARANORMAL

Hubble's Lens Captures a Cosmic Magnifying Glass

NASA's Hubble Space Telescope has imaged a giant, cosmic magnifying glass, a massive cluster of galaxies called Abell 2218. This "hefty" cluster resides in the constellation Draco, some 2 billion light-years from Earth.

The cluster is so massive that its enormous gravitational field deflects light rays passing through it, much as an optical lens bends light to form an image. This phenomenon, called gravitational lensing, magnifies, brightens, and distorts images from faraway objects.

Photo credit: NASA, Andrew Fruchter (STScI), and ERO team (STScI, ST-ECF)

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The Committee for the Scientific Investigation of Claims of the Paranormal encourages the critical investigation of paranormal and fringe-science claims from a responsible, scientific point of view and disseminates factual information about the results of such inquiries to the scientific community, the media, and the public. It also promotes science and scientific inquiry, critical thinking, science education, and the use of reason in examining important issues. To carry out these objectives the Committee:

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- Maintains an international network of people and groups interested in critically examining paranormal, fringe-science, and other claims, and in contributing to consumer education
- Encourages research by objective and impartial inquiry in areas where it is needed
- Convenes conferences and meetings
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